ENVIRON Corporation
Counsel in Health and Environmental Science

January 23, 1987

HAND DELIVER

Mr. Michael Surowiec
Bureau of Industrial Site Evaluation
Division of Waste Management
New Jersey Department of
Environmental Protection
401 East State Street, 5th Floor
Trenton, NJ 08625

Re: Hexcel Corporation - Industrial Chemical Group
205 Main Street, Lodi Borough, Bergen County
ECRA Case No. 86009

Dear Mike:

The following information is in response to your letter dated December 19, 1986, which was received by Edward A. Hogan Esq. of Lowenstein, Sandler, Brochin, et al. on December 24, 1986. In addition, a Revised Sampling Plan is enclosed which includes the supplementary sampling requested in the "Actions Required on the Part of the Applicant" in the Report of Inspection dated September 15, 1986, and your most recent letter. The following information is presented in response to specifications in your December 24th letter.

Item #1: A scaled site map submitted in triplicate to include the proposed well locations, and additional wells requested as follows:

a. One well cluster in the northern corner of the property.

b. A minimum of three shallow wells to define the extent of oil contamination near the tanks adjacent to Molnar Road (vicinity of recovery well).

Response: Three copies of a scaled site map which show proposed sampling locations are enclosed as Attachment 1. A monitoring well cluster has been added to the northern part of the property. After further review of your request to provide three additional shallow monitoring wells near the fuel oil tanks adjacent to Molnar Road, we feel that

210 Carnegie Center, Suite 201
Princeton, New Jersey 08540 · (609) 452-9000

additional wells in this area are not warranted at this time. A further discussion of our thoughts in this regard is presented below..

The oil that has been detected by soil borings and in the recovery well is believed to be the result of a leak in an underground fuel storage tank. To date soil samples have been collected within the vicinity of the storage tank which when tested were found to contain varying amounts of TPHC. A test of oil from the oil recovery well also indicated that the oil is contaminated with PCBs at concentrations of approximately 40 ppm (mg/kg).

Based on test results by TenEch Environmental Engineers, Inc. (see Exhibit A of Appendix 8 of the ECRA-2 submission) oil has been detected predominantly in a sand and gravel layer, approximately five to seven feet below grade with decreasing TPHC concentrations with distance from the tank. These results were also confirmed by subsequent tests by Princeton Aqua Science (PAS) in this same area (see Exhibit D of Appendix 8). The prior sampling by TenEch and PAS has demonstrated that the oil is present in the vicinity of the underground tanks, but the existing data do not indicate if the oil has spread beyond the immediate vicinity of the fuel tanks and has impacted shallow ground water.

ENVIRON proposes to further investigate the nature and extent of the oil contamination in two ways. First, seven borings will be constructed to obtain soil samples for chemical testing. Three deeper borings (nos. 101, 102, and 103) will be constructed to a depth of approximately 21 feet to investigate if oil contamination has spread vertically from the fuel tanks. Secondly, four shallow borings (nos. 104, 105, 106 and 107) will be constructed to determine the lateral extent of migration of oil in the soil layer.

All soil samples will be tested for TPHC, VOC, pH, and PCBs (assuming TPHC is detected above 100 ppm. This group of tests has been shown in prior studies at the site to provide reliable indicators for the oil contamination in soil.

Secondly, the impacts of the oil on ground water will be measured by construction of a monitoring well nest (well nos. MW2 and MW3) adjacent to the boiler room and fuel tanks. These wells are located in an area that, based on current information, is believed to be downgradient of the oil contamination and should identify the nature of any ground water impacts. An upgradient well (MW1) is located to the east of the administration building and will provide background data on ground water contamination.

Prior testing by PAS of soil samples that were contaminated with oil failed to show consistent levels of the more mobile, soluble organic priority pollutants in soil samples that were contaminated with oil. For example, PAS sample nos. 44109, 44110 and 44121 did not indicate consistent detectable concentrations of VOCs and Base/Neutral Organic compounds in soil samples that were reported to be contaminated with TPHC at concentrations ranging from 5,800 to 12,000 ppm. The predominant VOC (PERC) that was detected in soil samples around the fuel tank was widely used at the facility and is not believed to be an indicator of TPHC contamination in ground water. The lack of the other soluble organics (e.g., benzene) in this oil suggests that there is no soluble oil fraction that would be mobile in ground water and readily detectable in monitoring wells. Rather the oil appears to accumulate in the coarse sand and gravel units beneath and around the fuel tanks and could be most readily detected in soil samples from these units.

For these reasons the proposed sampling program for the oil contamination relies most heavily on the soil samples. While the impacts of this oil on ground water are unknown, based on existing information, priority pollutant analyses of organics in ground water are not anticipated to provide a reliable indicator of the oil contamination. Therefore, ENVIRON feels that the three additional shallow monitoring wells in vicinity of the fuel tanks, that were requested by the NJDEP in the letter dated December 19, 1986, will not substantially improve our understanding of the nature and extent of the oil contamination problem beyond the sampling program already proposed.

In addition, the area around the fuel tanks and along Molnar Road is paved and is a high use zone for vehicles. Therefore the construction of

monitoring wells within these paved areas would constitute a traffic hazard, and the long term integrity of the wells requested by NJDEP is doubtful.

Item #2: Construction details on the supply well including information on the depth, length of casing, diameter of casing, the flow rate, and details on the plumbing of the associated cooling system.

Response: A search of the file at the Fine Organics Corp. and questioning of their personnel produced no information related to the construction of the supply well. The flow rate was determined during the most recent cleaning of the casing and is enclosed as Attachment 2. According to Mr. Jim Higdon of Fine Organic Corp., the cooling system consists of running water externally over the equipment. This water discharges directly onto the floor in Buildings Nos. 1 and 11, where it is collected in the floor grates which discharge to the industrial sewer. No diagrams of the cooling system were available.

Item #3: Diagram of piping of the hot oil system.

Response: Information regarding the hot oil system is limited. Mr. Jim Higdon (FOC) supplied a diagram which he believes to be the plan for the construction of the system; however, he is uncertain about the accuracy of the information in this plan. The former employee with any direct knowledge of the system is deceased. The diagram is enclosed as Attachment 3.

Item #4: MSDS sheet on Mobile Therm, maximum operating temperature of oil, and method of pressurization of the system.

Response: Copies of the MSDS sheets for Mobil Therm have been supplied by Mobil Oil. These are enclosed as Attachment 4. Please note, the MSDS sheets are for most recently produced oils. These products may not be the same as those used between 1968 and 1981, when the hot oil system was in operation. MSDS sheets for oil produced during that time were not available. Mobil Oil manufactured three products under the Mobil Therm trademark. It is unclear

which of these products was used in the hot oil system. No information is available on the method of pressurization or other operational characteristics of the hot oil system.

Item #5: Clarification of the transformer fire referenced in the footnote of page II-8 of Appendix 8, exhibit B. Sampling for PCBs and PHCs will be required if on-site.

Response: Investigation of the transformer fire produced limited information. According to Mr. Jim Higdon (FOC), after discussions with other long time personnel, the fire occurred approximately ten years ago on a PSE&G-owned utility pole located just outside the property. Mr. Tim Ambacher of PSE&G informed ENVIRON that a PCB-contaminated capacitor bank was replaced by a non-contaminated capacitor bank on November 17, 1984 (see phone log, Attachment 5). PSE&G apparently has no record of a fire on this pole. Mr. Warren Libutti of PAS Corporation (author of Exhibit B, in the ECRA submission) apparently learned of the reported fire from FOI personnel and believes that an area of approximately 20 square meters was affected. However, except for a strip of grass approximately 5 feet wide in the vicinity of the boiler room along Molnar Road, this area was paved at the time of the reported fire. Infiltration would then have thus been limited. All soil samples that are proposed to be collected from this area will be analyzed for TPHC and PCBs.

Item #6: SOP manual from Gollob Analytical including example of deliverables package.

Response: On January 7, 1987, during a phone conversation notice was given by Arthur Bozza of ENVIRON to Mike Surowiece of the Bureau of Industrial Site Evaluation that JTC Environmental Consultants, Inc., will be retained to perform the analytical services for this investigation. A copy of the SOP Manual and an example of the deliverables package has formerly been supplied by JTC Environmental Consultants, Inc. to the NJDEP and is currently under review. NJDEP has requested additional information from JTC before it will grant QA approval. That information is forthcoming. In the event that JTC is not approved at the time the sampling plan is otherwise acceptable to NJDEP, an

analytical lab that has prior NJDEP approval will be retained at that time to prevent any delay in the implementation of the Sampling Plan.

Item #7: Clarification of the PCB concentration of sample A14 at 2'-4' (PAS #44111) Exhibit D.

Response: The use of a highlighter to underline the sample in question and the subsequent photocopying masked the reported concentration of PCB in that sample. A non-highlighted copy of that sample and its location are given in Attachment 6.

In response to Item 2 of the "Actions Required on the Part of the Applicant" the fluid removed from the pit is being stored in two 55 gallon drums and will be analyzed at the time when ground water samples are taken. If hazardous constituents are identified, the fluid will be disposed of in the prescribed manner and appropriate documentation will be provided to the Department.

The oil and water previously removed from the oil recovery well has been disposed. Mr. Jim Higdon (FOI) has supplied the Uniform Hazardous Waste Manifests for this oil which are enclosed as Attachment 7.

As stated in our December 18, 1986, letter to NJDEP, ENVIRON continued investigation as to the outfall from catch basin No. 2 and the drain hole in the floor at the rear of Building 11. This investigation produced no further information concerning this issue. However, a revised site plan depicting the drain and internal sewer system has been enclosed as Attachment 8.

The sampling addendums requested in the Inspection Report Letter dated September 15, 1986, are included in a Revised Sampling Plan which is enclosed.

Sincerely,

Robert Powell

Robert Powell, Ph.D., P.E.
Project Manager

Arthur Bozza
Staff Scientist

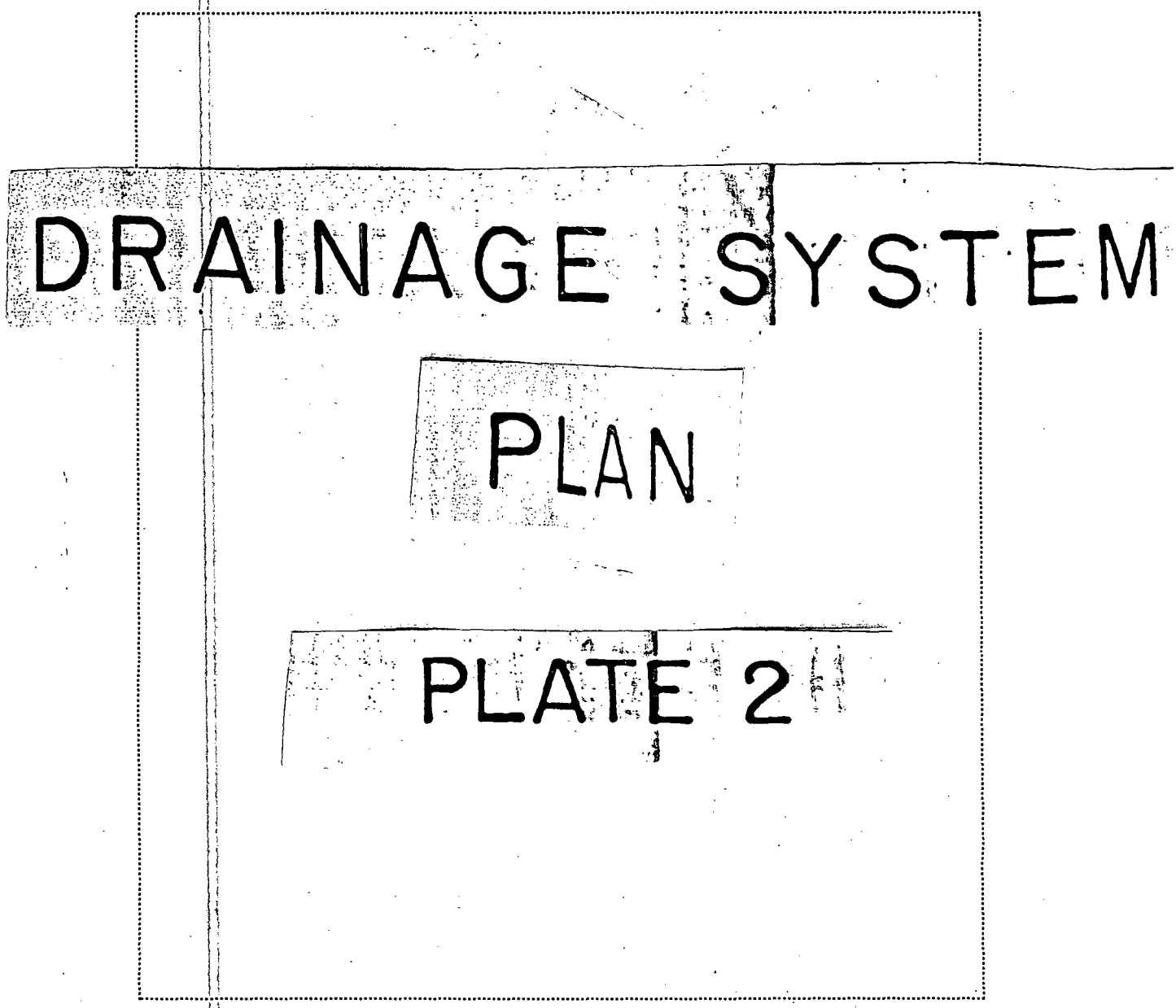
Arthur Bozza

RP/AB:cd
Enclosures
cc: E. Hogan
W. Nosil

886310006

NOTICE ABOUT OVERSIZED MAP

THIS MAP IS AN OVERSIZED DOCUMENT. IT IS AVAILABLE FOR REVIEW AT THE U.S. EPA SUPERFUND RECORDS CENTER, 290 BROADWAY, 18TH FLOOR, NEW YORK, NY 10007
PHONE: (212) 637-4308.



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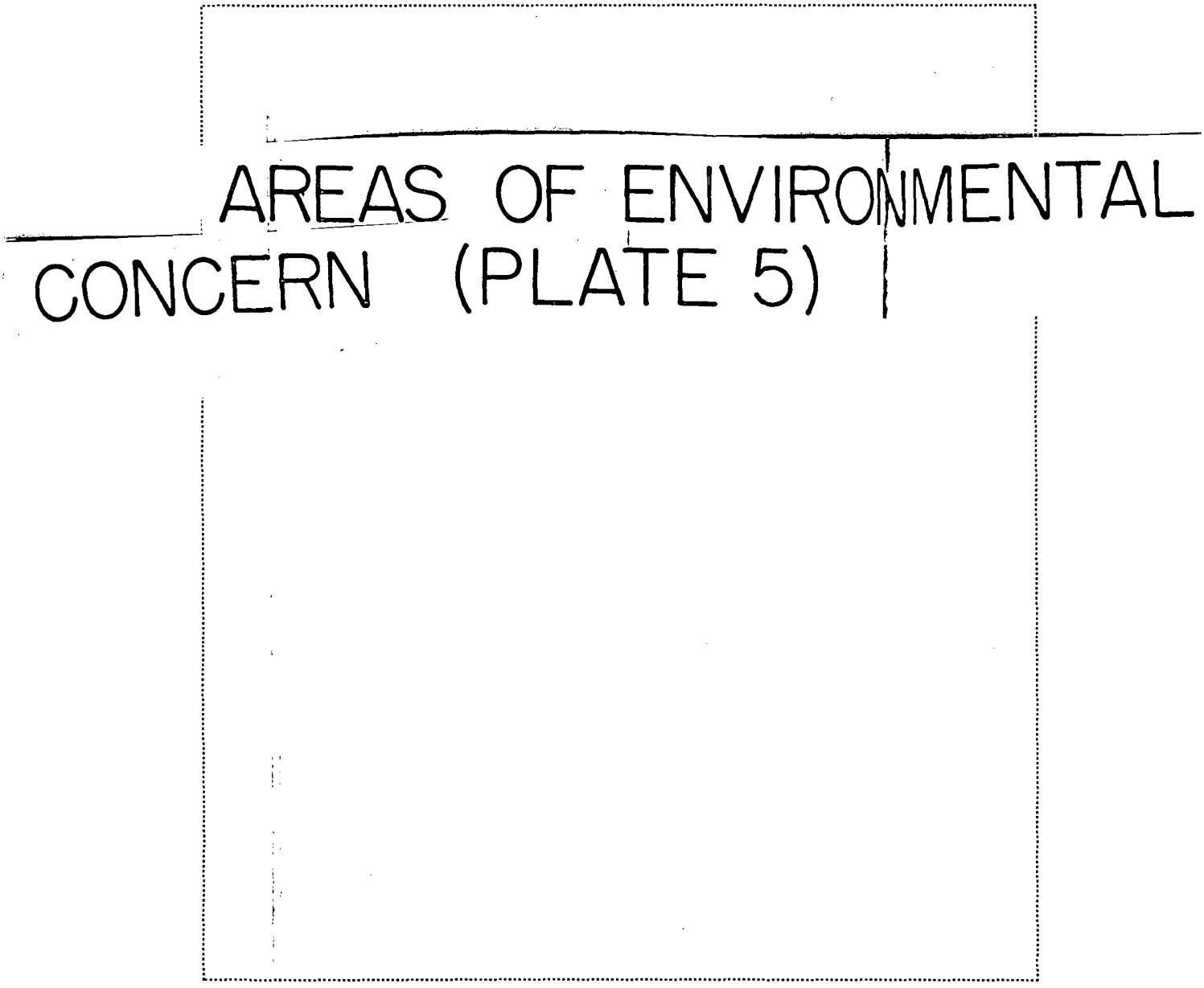

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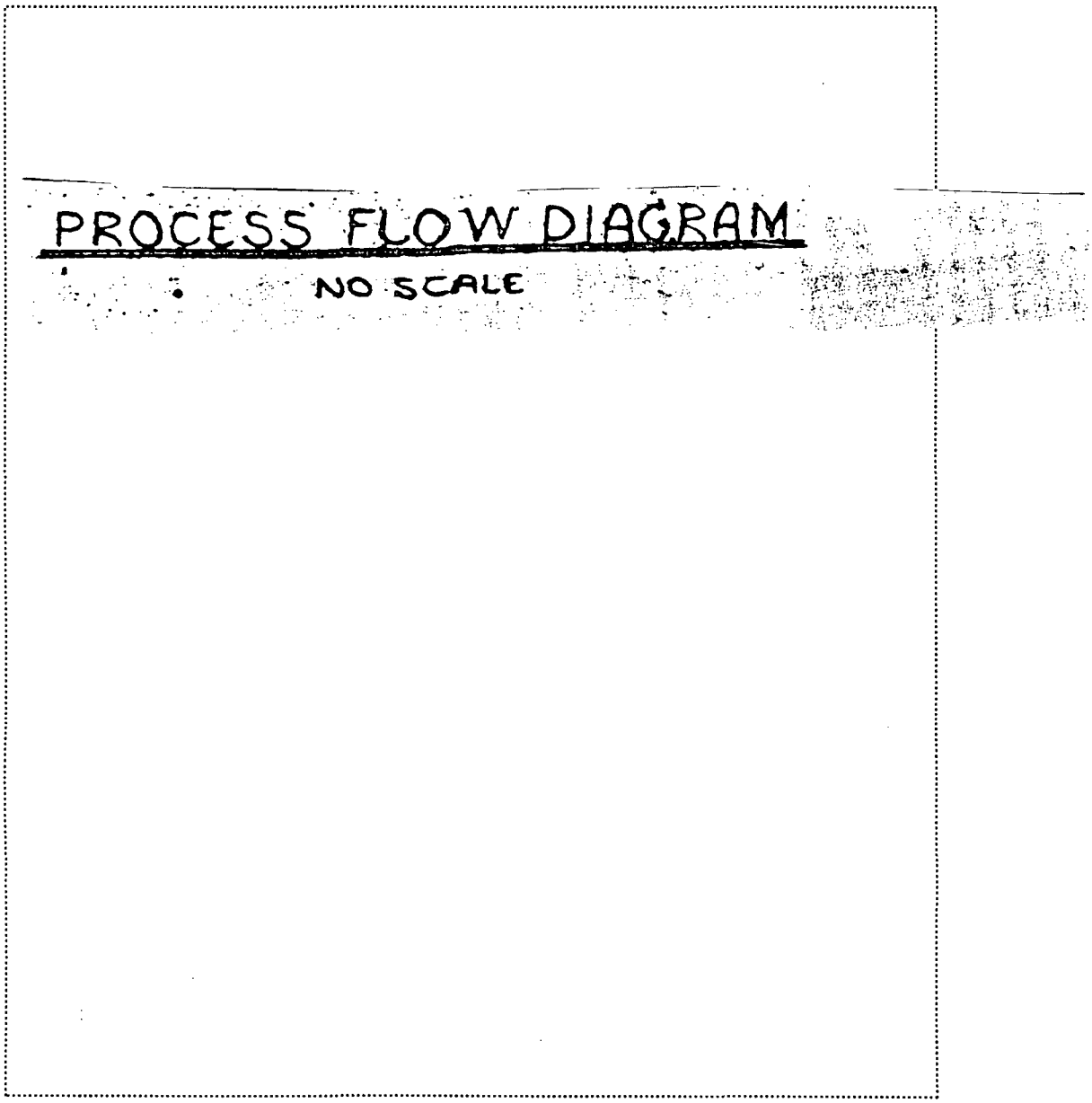
PHONE: (212) 637-4308.



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NOTICE ABOUT OVERSIZED MAP

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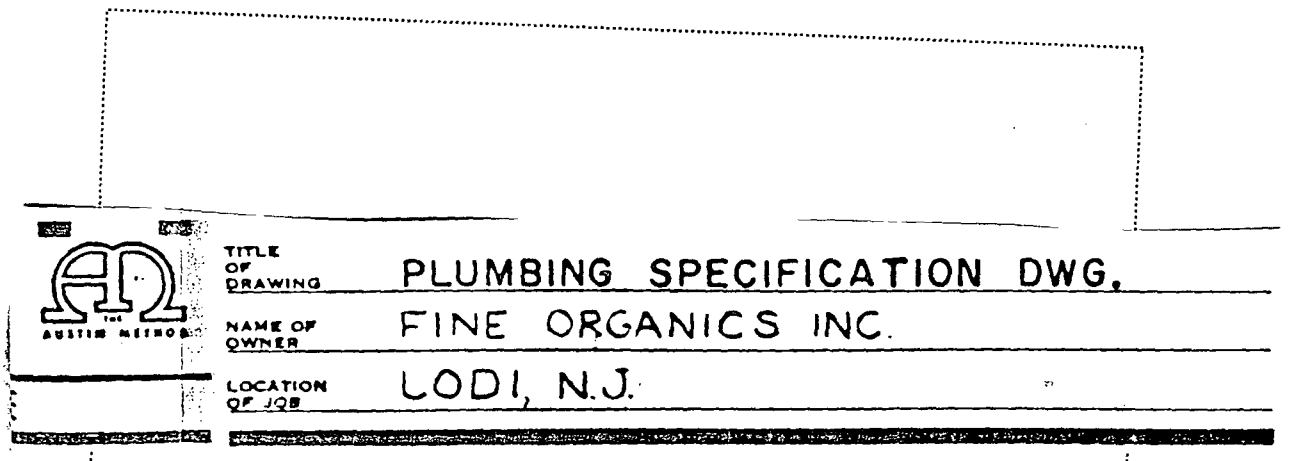
PHONE: (212) 637-4308.



886310007C

ATTACHMENT 2

[illegible] DRILLING CO., INC.

PUMP INSTALLATION AND [illegible]VICE

INVOICE

8-19-85

CONSTRUCTION – DEVELOPING – REPAIRING OF INDUSTRIAL AND MUNICIPAL WELLS

86 FIFTH AVENUE
HAWTHORNE, N.J. 07506
•
427-0895

[illegible] CHEMICAL PRODUCTS
[illegible] MAIN STREET
[illegible], [illegible] JERSEY 07644

date July 15, 1985

Attn: Mr. Joe Miazgowicz

6/25 and 7/1/81	1 man & Equip. 12 hrs. @31.00/hr. Took your Bowl Assembly back to our shop, Cleaned and reassembled, held in our shop not previously billed.	372.00
7-8-85	2 men & Equipment 9 hrs. @35.00/hr. * 14 Ty Raps	630.00 7.14
		1,009.14
	Plus 6% Sales Tax	60.55
	Total amount due	$1,069.69

Removed 16 lengths 3" pipe, bowl
assembly & pump. Reinstalled, cleaned used
owl assembly, reinstalled with same wire,
otor and pipe.

NOTE: We megged your Motor, 4 megs to ground on insulation test. Motor shows signs of cast iron deteriation and a slight drag in carriage. Drop pipe has several lengths that have been deteriated badly. We recommend that in the near future the pipe, bowl Assembly nd Motor and wire should be replaced.

NOTE Last Invoice

886310009

86 FIFTH AVENUE
HAWTHORNE, N

PUMP AND WELL TEST

Date 5-22-72

Job Name Mne Organics Location 205 Main Street Lodi, New Jersey

MEASURING DEVICE — Orifice Size 3" inches x 4" inches

Describe other method of measurement

Describe method of pumping

Diam. Well Drawdown gauge reading (before start) lbs. ft.

Static Level Depth of Setting Length of bowls

Length suction pipe Length tell-tale Type of Gauges

Those present at test

Time	Disch. Press. Lbs.	D. D. Gauge Reading	Draw-down Feet	T. D. H.	Orifice Inches	G. P. M.	Spec. Cap. G. P. F.	R. P. M.	Temp.	Remarks
12:30		3'								Started to pum
12:35		45'			42"	272				
12:45		54'			34"	246				red Water Light
1:00		57'			31	235				
1:30		60'			30"	230				
2:00		60'			29"	226				
2:15										fixed orifice
2:30		60'			35"	250				
3:00		60'			35"	250				Water Clear
3:30		60'			35"	250				
4:00		60'			35"	250				
4:30		60'			35"	250				Shut down

TEMPERATURE — Take not less than five readings during test.

CAPACITY — Take not less than five readings at different pressures and one against a closed valve to establish pump performance curve for turbine pumps.

Place additional remarks on reverse side.

886310010

ATTACHMENT 4

MOBIL

MOBIL OIL CORPORATION
3225 GALLOWS ROAD
FAIRFAX, VA 22037

JANUARY 5, 1987

ENVIRON CORP.
210 CARNEGIE CENTER
SUITE 201
PRINCETON, NJ 08540

ATTN: ARTHUR EDIZE

DEAR CUSTOMER:

WE HAVE RECENTLY RECEIVED YOUR REQUEST FOR HEALTH AND SAFETY INFORMATION ON THE MOBIL PRODUCTS LISTED ON THE FOLLOWING PAGE. ENCLOSED YOU WILL FIND A MOBIL MATERIAL SAFETY DATA BULLETIN (MSDB) FOR EACH PRODUCT LISTED.

THESE MSDBS MEET ALL THE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) HAZARD COMMUNICATION STANDARD (29 CFR PART 1910.1200). HAZARDOUS INGREDIENTS, IF ANY, ARE SHOWN IN SECTION III OF EACH MSDB. INGREDIENTS IDENTIFIED AS HAZARDOUS INCLUDE THOSE IN 29 CFR PART 1910, SUBPART Z, THE ACGIH THRESHOLD LIMIT VALUES (TLV'S), THE NATIONAL TOXICOLOGY PROGRAM (NTP) ANNUAL REPORT ON CARCINOGENS, AND THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) MONOGRAPHS; AND THOSE JUDGED TO BE POTENTIALLY HAZARDOUS BY MOBIL TOXICOLOGISTS.

WE ALSO REVIEW PRODUCT COMPONENTS AGAINST A NUMBER OF CHEMICAL LISTS SPECIFIED BY VARIOUS STATES FOR RIGHT-TO-KNOW REQUIREMENTS. INGREDIENTS REFERENCED ON THESE LISTS WILL BE SHOWN IN SECTION XII OF EACH MSDB.

WE ENCOURAGE YOU TO COMMUNICATE ANY HAZARD AND USE INFORMATION TO POTENTIAL USERS OF THESE PRODUCTS. SHOULD YOU REQUIRE FURTHER INFORMATION ON THESE OR OTHER MOBIL PRODUCTS, CONTACT YOUR MOBIL MARKETING REPRESENTATIVE, WHO WILL HANDLE YOUR REQUEST PROMPTLY.

MOBIL APPRECIATES YOUR BUSINESS AND WILL CONTINUE TO SUPPLY QUALITY PRODUCTS AND SERVICE, ALONG WITH INFORMATION TO ASSIST YOU IN YOUR EFFORTS TO MAINTAIN A SAFE, HEALTHFUL WORKPLACE.

SINCERELY,

G. E. HOFFMAN, MANAGER
PRODUCT FORMULATION
AND QUALITY CONTROL

MOBIL

MSDBS FOR THE FOLLOWING PRODUCTS ARE ENCLOSED:

68C314 MOBILTHERM 600
68C512 MOBILTHERM 603
68C306 MOBILTHERM LIGHT

CHANGE OF ADDRESS FORM

ACCOUNT NO: 519867002

TO CHANGE THE ADDRESS FOR MAILINGS OF MATERIAL SAFETY DATA BULLETINS, PLEASE COMPLETE THIS FORM AND RETURN TO:

MOBIL OIL CORPORATION
PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD
FAIRFAX, VIRGINIA 22037

CURRENT ADDRESS

ENVIRON CORP.
210 CARNEGIE CENTER
SUITE 201
PRINCETON, NJ 08540

ATTN: ARTHUR BOZZE

CORRECTED ADDRESS

NAME _____

TITLE _____

COMPANY _____

STREET ADDRESS _____

_____

CITY_____STATE_____ZIP_____

886310013

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED: 03/12/84

********** I. PRODUCT IDENTIFICATION **********

MOBILTHERM 600

SUPPLIER:
MOBIL OIL CORP.

HEALTH EMERGENCY TELEPHONE:
(212) 883-4411

CHEMICAL NAMES AND SYNONYMS:
PET. HYDROCARBONS AND ADDITIVES

TRANSPORT EMERGENCY TELEPHONE:
(800) 424-9300 (CHEMTREC)

USE OR DESCRIPTION:
HEAT TRANSFER OIL

********** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES **********

APPEARANCE: ASTM 2 LIQUID ODOR: MILD PH: NA
VISCOSITY AT 100 F, SUS: 275.0 AT 40 C, CS: 59.2
VISCOSITY AT 210 F, SUS: 45.0 AT 100 C, CS: 5.7
FLASH POINT F(C): >350(177) (ASTM D-92)
MELTING POINT F(C): NA POUR POINT F(C): -5(-21)
BOILING POINT F(C): > 450(232)
RELATIVE DENSITY, 15/4 C: 0.94 SOLUBILITY IN WATER: NEGLIGIBLE
VAPOR PRESSURE-MM HG 20C: < .1

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

********** III. INGREDIENTS **********

	WT PCT (APPROX)	EXPOSURE LIMITS MG/M3	EXPOSURE LIMITS PPM	SOURCES (AND NOTES)
HAZARDOUS INGREDIENTS:				
LIGHT CATALYTIC CRACKED DISTILLATE (64741-59-9)	60	NE	NE	
OTHER INGREDIENTS:				
REFINED MINERAL OILS	<40			
ADDITIVES AND/OR OTHER INGREDS.	< 5			

KEY TO SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, O=OSHA

NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

********** IV. HEALTH HAZARD DATA **********

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---

THRESHOLD LIMIT VALUE: 5.00 MG/M3 SUGGESTED FOR OIL MIST

EFFECTS OF OVEREXPOSURE: PROLONGED, REPEATED SKIN CONTACT MAY RESULT IN SKIN IRRITATION OR MORE SERIOUS SKIN DISORDERS. ****NOTE: THIS PRODUCT CONTAINS AROMATIC OILS. UNDER CONDITIONS OF POOR PERSONAL HYGIENE AND PROLONGED, REPEATED CONTACTS, SOME AROMATIC OILS HAVE BEEN SUSPECTED AS A CAUSE OF SKIN CANCER IN HUMANS.

********** V. EMERGENCY AND FIRST AID PROCEDURES **********
--- FOR PRIMARY ROUTES OF ENTRY ---

EYE CONTACT: FLUSH WITH WATER.
SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER OR WATERLESS SKIN CLEANER. DO NOT WEAR ORDINARY CLOTHING WET WITH THIS PRODUCT. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
INHALATION: REMOVE FROM FURTHER EXPOSURE. IF UNCONSCIOUSNESS OCCURS, SEEK IMMEDIATE MEDICAL ASSISTANCE AND CALL A PHYSICIAN. IF BREATHING HAS STOPPED, USE MOUTH TO MOUTH RESUSCITATION.
INGESTION: NOT EXPECTED TO BE A PROBLEM. HOWEVER, IF GREATER THAN 1/2 LITER(PINT) INGESTED, IMMEDIATELY GIVE 1 TO 2 GLASSES OF WATER AND CALL A PHYSICIAN, HOSPITAL EMERGENCY ROOM OR POISON CONTROL CENTER FOR ASSISTANCE. DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

********** VI. FIRE AND EXPLOSION HAZARD DATA **********
FLASH POINT F(C): > 350(177) (ASTM D-92)
FLAMMABLE LIMITS. LEL: .6 UEL: 7.0
EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.
SPECIAL FIRE FIGHTING PROCEDURES: FOR FIRES IN ENCLOSED AREAS, FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE
NFPA HAZARD ID: HEALTH: 0, FLAMMABILITY: 1, REACTIVITY: 0

********** VII. REACTIVITY DATA **********
STABILITY (THERMAL, LIGHT, ETC.): STABLE
CONDITIONS TO AVOID: STRONG OXIDATION
INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS
HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

********** VIII. SPILL OR LEAK PROCEDURE **********
ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.
WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED, CONTROLLED BURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION. SUCH BURNING MAY BE LIMITED PURSUANT TO THE RESOURCE CONSERVATION AND RECOVERY ACT. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

********** IX. SPECIAL PROTECTION INFORMATION **********
EYE PROTECTION: NO SPECIAL EQUIPMENT REQUIRED.
SKIN PROTECTION: IF SKIN CONTACT IS LIKELY IMPERVIOUS GLOVES AND APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT SHOULD BE WORN. GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.
RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.
VENTILATION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

********** X. SPECIAL PRECAUTIONS **********
HANDLING: AVOID PROLONGED REPEATED SKIN CONTACT AND BREATHING MISTS/VAPORS.
STORAGE: SEE APPENDIX FOR PRECAUTIONARY LABEL. FL-231

********** XI. TOXICOLOGICAL DATA **********
---ACUTE---
ORAL TOXICITY (RATS): SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.
DERMAL TOXICITY (RABBITS): SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.
INHALATION TOXICITY (RATS): NOT ESTABLISHED
EYE IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.
SKIN IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.
---CHRONIC OR SPECIALIZED (SUMMARY)---
***SKIN TUMORIGENICITY: POSITIVE IN MICE.

********** XII. REGULATORY INFORMATION **********
TSCA INVENTORY STATUS: ALL COMPONENTS REGISTERED.
D.O.T. SHIPPING NAME: NOT APPLICABLE
D.O.T. HAZARD CLASS: NOT APPLICABLE
US OSHA HAZARD COMMUNICATION STANDARD: PRODUCT ASSESSED IN ACCORDANCE WITH OSHA CFR 1910.1200 AND DETERMINED TO BE HAZARDOUS.
RCRA INFORMATION: THE UNUSED PRODUCT, IN OUR OPINION, IS NOT SPECIFICALLY LISTED BY THE EPA AS A HAZARDOUS WASTE (40 CFR, PART 261D); DOES NOT EXHIBIT THE HAZARDOUS CHARACTERISTICS OF IGNITABILITY, CORROSIVITY, OR REACTIVITY, AND IS NOT FORMULATED WITH THE METALS CITED IN THE EP TOXICITY TEST. HOWEVER, USED PRODUCT MAY BE REGULATED.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
HEAVY PARAFFINIC DISTILLATE SOLVENT EXTRACT	64742-04-7	3

--- KEY TO LIST CITATIONS ---
1 = OSHA Z, 2 = ACGIH, 3 = IARC, 4 = NTP, 5 = NCI,
6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325M, 9 = DOT HMT, 10 = CA RTK,
11 = IL RTK, 12 = MA RTK, 13 = MN RTK, 14 = NJ RTK, 15 = MI 293,
16 = FL RTK, 17 = PA RTK.
--- NTP, IARC, AND OSHA INCLUDE CARCINOGENIC LISTINGS ---

****

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

****

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

********** APPENDIX **********
FOR MOBIL USE ONLY: (FILL NO: MTL1231001) MHC: 1* 1* NE 0* 0* PPEC:
USS2-144 APPROVE REVISED: 03/12/84

****
PRECAUTIONARY LABEL TEXT:

CONTAINS AROMATIC PETROLEUM OIL

WARNING.

MAY CAUSE IRRITATION OR MORE SERIOUS SKIN
DISORDERS ON PROLONGED, REPEATED SKIN CONTACT.

PROLONGED SKIN CONTACT HAS CAUSED SKIN CANCER
IN LABORATORY ANIMALS.

AVOID CONTACT WITH SKIN AND CLOTHING.
AVOID BREATHING VAPOR OR MIST.
WHEN CONTACT IS LIKELY, WEAR OIL IMPERVIOUS CLOTHING
AND GLOVES.
ORDINARY CLOTHING WET WITH THIS PRODUCT MUST BE REMOVED.
LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
DISCARD SHOES IF MATERIAL HAS PENETRATED TO INSIDE SURFACE.
FIRST AID: IN CASE OF SKIN CONTACT, THOROUGHLY WASH AREA
WITH SOAP AND WATER.

FOR INDUSTRIAL USE ONLY.

NOT INTENDED OR SUITABLE FOR USE IN OR
AROUND A HOUSEHOLD OR DWELLING.

ATTENTION
EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE, INCLUDING
FLAMMABLE OR EXPLOSIVE VAPORS. DO NOT CUT, PUNCTURE OR WELD ON
OR NEAR CONTAINER. ALL LABEL WARNINGS AND PRECAUTIONS MUST BE
OBSERVED UNTIL CONTAINER HAS BEEN THROUGHLY CLEANED OR
DESTROYED.

REFER TO PRODUCT MATERIAL SAFETY DATA BULLETIN
FOR FURTHER SAFETY AND HEALTH INFORMATION.

MOBIL OIL CORPORATION, NEW YORK, N.Y. 10017 FL-231(5-84)

****
D.O.T. SHIPPING NAME: NOT APPLICABLE
D.O.T. HAZARD CLASS: NOT APPLICABLE

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED: 03/12/84

********** I. PRODUCT IDENTIFICATION **********

MOBILTHERM 603

SUPPLIER:
MOBIL OIL CORP.

HEALTH EMERGENCY TELEPHONE:
(212) 883-4411

CHEMICAL NAMES AND SYNONYMS:
PETROLEUM HYDROCARBONS

TRANSPORT EMERGENCY TELEPHONE:
(800) 424-9300 (CHEMTREC)

USE OR DESCRIPTION:
HEAT TRANSFER OIL

********** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES **********

APPEARANCE: ASTM 2.0 LIQUID ODOR: MILD PH: NA
VISCOSITY AT 100 F, SUS: 105.0 AT 40 C, CS: 20.0
VISCOSITY AT 210 F, SUS: 40.0 AT 100 C, CS: 4.1
FLASH POINT F(C): >380(193) (ASTM D-92)
MELTING POINT F(C): NA POUR POINT F(C): 20(-7)
BOILING POINT F(C): > 600(316)
RELATIVE DENSITY, 15/4 C: 0.865 SOLUBILITY IN WATER: NEGLIGIBLE
VAPOR PRESSURE-MM HG 20C: < .1

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

********** III. INGREDIENTS **********

	WT PCT (APPROX)	EXPOSURE LIMITS MG/M3	EXPOSURE LIMITS PPM	SOURCES (AND NOTES)
HAZARDOUS INGREDIENTS:				
NONE				
OTHER INGREDIENTS:				
REFINED MINERAL OILS	100			

KEY TO SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, O=OSHA

NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

********** IV. HEALTH HAZARD DATA **********

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---

THRESHOLD LIMIT VALUE: 5.00 MG/M3 SUGGESTED FOR OIL MIST
EFFECTS OF OVEREXPOSURE: SLIGHT SKIN IRRITATION.

********** V. EMERGENCY AND FIRST AID PROCEDURES **********

--- FOR PRIMARY ROUTES OF ENTRY ---

EYE CONTACT: FLUSH WITH WATER.
SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER.
INHALATION: NOT EXPECTED TO BE A PROBLEM.
INGESTION: NOT EXPECTED TO BE A PROBLEM WHEN INGESTED. IF UNCOMFORTABLE SEEK MEDICAL ASSISTANCE.

********** VI. FIRE AND EXPLOSION HAZARD DATA **********

FLASH POINT F(C): > 380(193) (ASTM D-92)
FLAMMABLE LIMITS. LEL: .6 UEL: 7.0
EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.
SPECIAL FIRE FIGHTING PROCEDURES: FOR FIRES IN ENCLOSED AREAS, FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE
NFPA HAZARD ID: HEALTH: 0, FLAMMABILITY: 1, REACTIVITY: 0

********** VII. REACTIVITY DATA **********

STABILITY (THERMAL, LIGHT, ETC.): STABLE

CONDITIONS TO AVOID: STRONG OXIDATION

INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS

HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

********** VIII. SPILL OR LEAK PROCEDURE **********

ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED, CONTROLLED BURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION. SUCH BURNING MAY BE LIMITED PURSUANT TO THE RESOURCE CONSERVATION AND RECOVERY ACT. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

********** IX. SPECIAL PROTECTION INFORMATION **********

EYE PROTECTION: NO SPECIAL EQUIPMENT REQUIRED.

SKIN PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.

RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

VENTILATION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

********** X. SPECIAL PRECAUTIONS **********

NO SPECIAL PRECAUTIONS REQUIRED.

********** XI. TOXICOLOGICAL DATA **********

---ACUTE---

ORAL TOXICITY (RATS): LD50: > 15 G/KG PRACTICALLY NONTOXIC
DERMAL TOXICITY (RABBITS): LD50: > 5 G/KG PRACTICALLY NONTOXIC
INHALATION TOXICITY (RATS): NOT APPLICABLE ---HARMFUL CONCENTRATIONS OF MISTS AND/OR VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY CUSTOMARY OR REASONABLY FORESEEABLE HANDLING, USE, OR MISUSE OF THIS PRODUCT.
EYE IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.
SKIN IRRITATION (RABBITS): MAY CAUSE SLIGHT IRRITATION ON PROLONGED OR REPEATED CONTACT. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

---CHRONIC OR SPECIALIZED (SUMMARY)---

THE BASE OILS IN THIS PRODUCT ARE SEVERELY SOLVENT REFINED AND/OR SEVERELY HYDROTREATED. TWO YEAR MOUSE SKIN PAINTING STUDIES OF SIMILAR OILS SHOWED NO EVIDENCE OF CARCINOGENIC EFFECTS. SEVERELY SOLVENT REFINED AND SEVERELY HYDROTREATED MINERAL BASE OILS HAVE BEEN TESTED AT MOBIL ENVIRONMENTAL AND HEALTH SCIENCES LABORATORY BY DERMAL APPLICATION TO RATS 5 DAYS/WEEK FOR 90 DAYS AT DOSES SIGNIFICANTLY HIGHER THAN THOSE EXPECTED DURING NORMAL INDUSTRIAL EXPOSURE. EXTENSIVE EVALUATIONS INCLUDING MICROSCOPIC EXAMINATION OF INTERNAL ORGANS AND CLINICAL CHEMISTRY OF BODY FLUIDS, SHOWED NO ADVERSE EFFECTS.

********** XII. REGULATORY INFORMATION **********

TSCA INVENTORY STATUS: ALL COMPONENTS REGISTERED.
D.O.T. SHIPPING NAME: NOT APPLICABLE
D.O.T. HAZARD CLASS: NOT APPLICABLE
US OSHA HAZARD COMMUNICATION STANDARD: PRODUCT ASSESSED IN ACCORDANCE WITH OSHA CFR 1910.1200 AND DETERMINED NOT TO BE HAZARDOUS.
RCRA INFORMATION: THE UNUSED PRODUCT, IN OUR OPINION, IS NOT SPECIFICALLY LISTED BY THE EPA AS A HAZARDOUS WASTE (40 CFR, PART 261D); DOES NOT EXHIBIT THE HAZARDOUS CHARACTERISTICS OF IGNITABILITY, CORROSIVITY, OR REACTIVITY, AND IS NOT FORMULATED WITH THE METALS CITED IN THE EP TOXICITY TEST. HOWEVER, USED PRODUCT MAY BE REGULATED.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
*** NO INGREDIENT CITATIONS ***		

--- KEY TO LIST CITATIONS ---

1 = OSHA Z, 2 = ACGIH, 3 = IARC, 4 = NTP, 5 = NCI,
6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325M, 9 = DOT HMT, 10 = CA RTK,
11 = IL RTK, 12 = MA RTK, 13 = MN RTK, 14 = NJ RTK, 15 = MI 293,
16 = FL RTK, 17 = PA RTK.

--- NTP, IARC, AND OSHA INCLUDE CARCINOGENIC LISTINGS ---

****

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

****

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

********** APPENDIX **********

FOR MOBIL USE ONLY: (FILL NO: MTN463A001) MHC: 0 0 NA 0* 1* PPEC: US83-130 APPROVE REVISED: 03/12/84

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED: 05/16/86

********** I. PRODUCT IDENTIFICATION **********

MOBILTHERM LIGHT

SUPPLIER:
MOBIL OIL CORP.

HEALTH EMERGENCY TELEPHONE:
(212) 883-4411

CHEMICAL NAMES AND SYNONYMS:
DISTILLATE, THERMALLY CRACKED

TRANSPORT EMERGENCY TELEPHONE:
(800) 424-9300 (CHEMTREC)

USE OR DESCRIPTION:
HEAT TRANSFER OIL

********** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES **********

APPEARANCE: BROWN LIQUID ODOR: MILD PH: NA
VISCOSITY AT 100 F, SUS: 45.0 AT 40 C, CS: 5.7
VISCOSITY AT 210 F, SUS: 34.0 AT 100 C, CS: 2.3
FLASH POINT F(C): 200(93) (ASTM D-93)
MELTING POINT F(C): NA POUR POINT F(C): -20(-29)
BOILING POINT F(C): > 450(232)
RELATIVE DENSITY, 15/4 C: 0.98 SOLUBILITY IN WATER: NEGLIGIBLE
VAPOR PRESSURE-MM HG 20C: < .1

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES
FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

********** III. INGREDIENTS **********

	WT PCT (APPROX)	EXPOSURE LIMITS MG/M3	PPM	SOURCES (AND NOTES)
HAZARDOUS INGREDIENTS:				
LIGHT CATALYTIC CRACKED DISTILLATE (64741-59-9)	95	NE	NE	
OTHER INGREDIENTS:				
ADDITIVES AND/OR OTHER INGREDS.	< 5			

KEY TO SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, O=OSHA
NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

********** IV. HEALTH HAZARD DATA **********

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---

EFFECTS OF OVEREXPOSURE: MODERATE EYE IRRITATION. MODERATE SKIN IRRITATION. PROLONGED, REPEATED SKIN CONTACT MAY RESULT IN SKIN IRRITATION OR MORE SERIOUS SKIN DISORDERS. ****NOTE: THIS PRODUCT CONTAINS AROMATIC OILS. UNDER CONDITIONS OF POOR PERSONAL HYGIENE AND PROLONGED, REPEATED CONTACTS, SOME AROMATIC OILS HAVE BEEN SUSPECTED AS A CAUSE OF SKIN CANCER IN HUMANS.

********** V. EMERGENCY AND FIRST AID PROCEDURES **********

--- FOR PRIMARY ROUTES OF ENTRY ---

EYE CONTACT: FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ASSISTANCE.

SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER OR WATERLESS SKIN CLEANER. DO NOT WEAR ORDINARY CLOTHING WET WITH THIS PRODUCT. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

INHALATION: REMOVE FROM FURTHER EXPOSURE. IF UNCONSCIOUSNESS OCCURS, SEEK IMMEDIATE MEDICAL ASSISTANCE AND CALL A PHYSICIAN. IF BREATHING HAS STOPPED, USE MOUTH TO MOUTH RESUSCITATION.

INGESTION: DO NOT INDUCE VOMITING. ADMINISTER VEGETABLE OIL. GET MEDICAL ASSISTANCE. (NOTE TO PHYSICIAN: MATERIAL IF ASPIRATED INTO THE LUNGS MAY CAUSE CHEMICAL PNEUMONITIS. TREAT APPROPRIATELY)

********** VI. FIRE AND EXPLOSION HAZARD DATA **********

FLASH POINT F(C): 200(93) (ASTM D-93)

FLAMMABLE LIMITS. LEL: .6 UEL: 6.0

EXTINGUISHING MEDIA: CO2, FOAM, DRY CHEMICAL

SPECIAL FIRE FIGHTING PROCEDURES: FOR FIRES IN ENCLOSED AREAS, FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

NFPA HAZARD ID: HEALTH: 0, FLAMMABILITY: 2, REACTIVITY: 0

********** VII. REACTIVITY DATA **********

STABILITY (THERMAL, LIGHT, ETC.): STABLE

CONDITIONS TO AVOID: STRONG OXIDATION

INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS

HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

********** VIII. SPILL OR LEAK PROCEDURE **********

ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED, CONTROLLED BURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION. SUCH BURNING MAY BE LIMITED PURSUANT TO THE RESOURCE CONSERVATION AND RECOVERY ACT. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

********** IX. SPECIAL PROTECTION INFORMATION **********

EYE PROTECTION: CHEMICAL TYPE GOGGLES SHOULD BE WORN.

SKIN PROTECTION: IMPERVIOUS GLOVES SHOULD BE WORN. IF CONTACT IS LIKELY, OIL IMPERVIOUS CLOTHING SHOULD BE WORN.

RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION. APPROVED RESPIRATORY PROTECTIVE EQUIPMENT MUST BE USED IN HIGH VAPOR OR MIST CONCENTRATIONS.

VENTILATION: VENTILATION DESIRABLE AND EQUIPMENT SHOULD BE EXPLOSION PROOF. USE IN WELL VENTILATED AREA.

********** X. SPECIAL PRECAUTIONS **********

HANDLING: AVOID CONTACT WITH EYES. AVOID CONTACT WITH SKIN. AVOID PROLONGED REPEATED SKIN CONTACT AND BREATHING MISTS/VAPORS.

STORAGE: STORE IN A COOL AREA. SEE APPENDIX FOR PRECAUTIONARY LABEL. CL-407

STORED MATERIALS MUST BE LABELED AS: COMBUSTIBLE.

********** XI. TOXICOLOGICAL DATA **********

---ACUTE---

ORAL TOXICITY (RATS): MODERATELY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS): SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY (RATS): SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

EYE IRRITATION (RABBITS): MAY CAUSE MODERATE IRRITATION. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS): MAY CAUSE MODERATE IRRITATION ON PROLONGED OR REPEATED CONTACT. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

---CHRONIC OR SPECIALIZED (SUMMARY)---

***SKIN TUMORIGENICITY: POSITIVE IN MICE.

********** XII. REGULATORY INFORMATION **********

TSCA INVENTORY STATUS: ALL COMPONENTS REGISTERED.

D.O.T. SHIPPING NAME: NOT APPLICABLE

D.O.T. HAZARD CLASS: NOT APPLICABLE

US OSHA HAZARD COMMUNICATION STANDARD: PRODUCT ASSESSED IN ACCORDANCE WITH OSHA CFR 1910.1200 AND DETERMINED TO BE HAZARDOUS.

RCRA INFORMATION: THE UNUSED PRODUCT, IN OUR OPINION, IS NOT SPECIFICALLY LISTED BY THE EPA AS A HAZARDOUS WASTE (40 CFR, PART 261D); DOES NOT EXHIBIT THE HAZARDOUS CHARACTERISTICS OF IGNITABILITY, CORROSIVITY, OR REACTIVITY, AND IS NOT FORMULATED WITH THE METALS CITED IN THE EP TOXICITY TEST. HOWEVER, USED PRODUCT MAY BE REGULATED.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
LIGHT CATALYTIC CRACKED DISTILLATE	64741-59-9	3

--- KEY TO LIST CITATIONS ---

1 = OSHA Z, 2 = ACGIH, 3 = IARC, 4 = NTP, 5 = NCI,
6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325M, 9 = DOT HMT, 10 = CA RTK,
11 = IL RTK, 12 = MA RTK, 13 = MN RTK, 14 = NJ RTK, 15 = MI 293,
16 = FL RTK, 17 = PA RTK.

--- NTP, IARC, AND OSHA INCLUDE CARCINOGENIC LISTINGS ---

****

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

****

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

********** APPENDIX **********
FOR MOBIL USE ONLY: (FILL NO: MTL2701*001) MHC: 2* 1* 1* 2* 2* PPEC: A US85-357 APPROVE REVISED: 05/16/86

****
PRECAUTIONARY LABEL TEXT:

CONTAINS AROMATIC PETROLEUM OIL

WARNING

MAY CAUSE IRRITATION OR MORE SERIOUS SKIN DISORDERS ON PROLONGED, REPEATED SKIN CONTACT.

COMBUSTIBLE.

PROLONGED SKIN CONTACT HAS CAUSED SKIN CANCER IN LABORATORY ANIMALS.

AVOID CONTACT WITH SKIN AND CLOTHING.
AVOID BREATHING VAPOR OR MIST.
KEEP AWAY FROM HEAT AND FLAME.
USE WITH ADEQUATE VENTILATION.

WHEN CONTACT IS LIKELY, WEAR OIL IMPERVIOUS CLOTHING AND GLOVES.
ORDINARY CLOTHING WET WITH THIS PRODUCT MUST BE REMOVED.
LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
DISCARD SHOES IF MATERIAL HAS PENETRATED TO INSIDE SURFACE.

FIRST AID: IN CASE OF SKIN CONTACT, THOROUGHLY WASH AREA WITH SOAP AND WATER.

FOR COMMERCIAL USE ONLY.

ATTENTION
EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE, INCLUDING FLAMMABLE OR EXPLOSIVE VAPORS. DO NOT CUT, PUNCTURE OR WELD ON OR NEAR CONTAINER. ALL LABEL WARNINGS AND PRECAUTIONS MUST BE OBSERVED UNTIL CONTAINER HAS BEEN THOROUGHLY CLEANED OR DESTROYED.

REFER TO PRODUCT MATERIAL SAFETY DATA BULLETIN FOR FURTHER SAFETY AND HEALTH INFORMATION.

MOBIL OIL CORPORATION, NEW YORK, N.Y. 10017 CL-407(1/86)

****
D.O.T. SHIPPING NAME: NOT APPLICABLE
D.O.T. HAZARD CLASS: NOT APPLICABLE

ATTACHMENT 5

December 11, 1986

MEMORANDUM

To: File -- Hexcel (536A)

From: Arthur Bozza

Subject: Phone conversation of December 11, 1986, with PSE&G, Tim Ambacher

Spoke with Mr. Tim Ambacher and requested information concerning the transformer fire of approximately ten years ago on pole #E62674L at the Hexcel Corporation's Lodi facility. Mr. Ambacher informed me that PSE&G has no record of any fire. He did say that a PCB-contaminated capacitor bank was removed and replaced with a non-PCB capacitor bank on November 17, 1984. No further information was available.

ATTACHMENT 6

PRINCETON AQUA SCIENCE

165 Fieldcrest Avenue • CN 7809 • Edison, New Jersey 08818-7809 • Telephone (201) 225-2000

Company Hexcel Corporation
Address 11711 Dublin Blvd.
City Dublin State CA Zip 94568-0705
To Attn. of:

Job #: 8433
Date: 10/1/85
Auth.:
Lot #: 8147, 8148
Invoice #:
Sample Date: 8/19-20/85
N.J. Lab Certification ID# 12064

Pesticide and PCB Compounds (by GC/MS)	PAS #44111 A14, 2-4', A11 (ppm)
PCB-1016	ND
PCB-1221	ND
PCB-1232	ND
PCB-1242	ND
PCB-1248	4187
PCB-1254	ND
PCB-1260	ND

ND-NONDETECTABLE LESS THAN 3.0ppm

PRINCETON AQUA SCIENCE

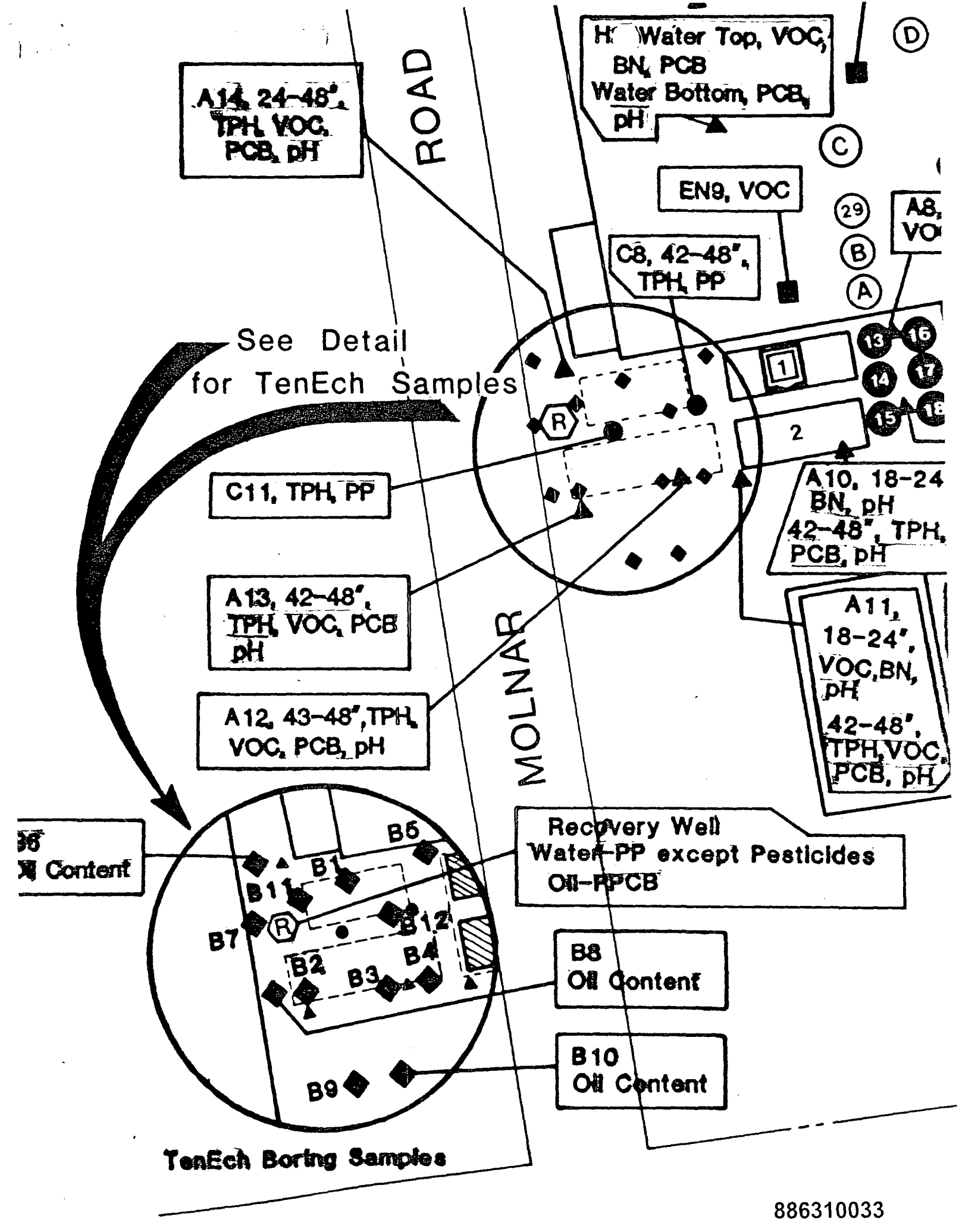
165 Fieldcrest Avenue • CN 7809 • Edison, New Jersey 08818-7809 • Telephone (201) 225-2000

Company Hexcel Corporation
Address 11711 Dublin Blvd.
City Dublin State CA Zip 94568-0705
To Attn. of:

Job #: 8433
Date: 10/1/85
Auth.:
Lot #: 8147, 8148
Invoice #:
Sample Date: 8/19-20/85
N.J. Lab Certification ID= 12064

Pesticide and PCB Compounds (by GC/MS)	PAS =44111 A14, 2-4', A11 (ppm)
PCB-1016	ND
PCB-1221	ND
PCB-1232	ND
PCB-1242	ND
PCB-1248	4.39
PCB-1254	ND
PCB-1260	ND

ND-NONDETECTABLE LESS THAN 3.0ppm


A14, 24-48", TPH, VOC, PCB, pH
ROAD
H Water Top, VOC, BN, PCB
Water Bottom, PCB, pH
D
C
EN9, VOC
29
B
A
C8, 42-48", TPH, PP
A8, VO
See Detail for TenEch Samples
R
1
2
13
16
14
17
15
C11, TPH, PP
A10, 18-24 BN, pH 42-48", TPH, PCB, pH
A13, 42-48", TPH, VOC, PCB pH
A12, 43-48", TPH, VOC, PCB, pH
MOLNAR
A11, 18-24", VOC, BN, pH 42-48", TPH, VOC, PCB, pH
Content
B5
B1
B11
B7
B12
B2
B4
B3
Recovery Well
Water-PP except Pesticides
Oil-PPCB
B8
Oil Content
B10
Oil Content
B9
TenEch Boring Samples

886310033

ATTACHMENT 7

Department of Pollution [illegible]ntrol and Ecology
P. O. Box 9583 Little Ro[illegible], Arkansas 72219
Telephone 501-562-7444

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)* Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NJD011096392 — Manifest Document No. 75222
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Fine Organics
205 North Main St. Lodi, NJ 07644
4. Generator's Phone (201) 472-6800

A. State Manifest Document Number: AR- 76911
B. State Generator's ID: ~~AR~~ Same

5. Transporter 1 Company Name: E. T. G. I.
6. US EPA ID Number: NJD000692061
C. State Transporter's ID: H71PC770*
D. Transporter's Phone: 201-347-8200

7. Transporter 2 Company Name: ENSCO, INC.
8. US EPA ID Number: ARD069748192
E. State Transporter's ID: H10 PC708
F. Transporter's Phone: (501) 863-7173

9. Designated Facility Name and Site Address
ENSCO, INC.
~~4TH + SMITH AVE~~ Am. Oil Road
EL DORADO, ARK 71730
10. US EPA ID Number: ARD069748192 ~~ARD000040709~~ PCB
G. State Facility's ID: ~~AR0000404 PCB~~
H. Facility's Phone: 863-7173 501 - ~~862 1663~~

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE POLYCHLORINATED BIPHENYLS ORM-E UN-2315 RQ 4.54/10	002	DF	00800	P	PCB NJ X-387
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
(A) PCB > 500 PPM FILTER SOLIDS 5/T
(CARBON, DIATOMACIOUS EARTH
~~SOME~~ FREE LIQUID

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
*NJDEPS7107(6068)
NJ558-TRX

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment and Arkansas state regulations.

Printed/Typed Name	Signature	Month	Day	Year
JAMES R. HIGDON	James R. Higdon	1	02	86

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
ROBERT HUBER	Robert Huber	1	02	86

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Benny Jones	Benny Jones	1	02	86

19. Discrepancy Indication Space
Rec. @ Ensco: 1188#

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Faye Andrews	Faye Andrews	1	02	86

EPA Form 8700-22 (Rev. 4-85) Previous edition is obsolete.

NOTICE: THE ORIGINAL AND NOT LESS THAN TWO (2) COPIES MUST ACCOMPANY

886310035

STATE OF ARKANSAS
Department of Pollution Control and Ecology
P. O. Box 9583 Little Rock, Arkansas 72219
Telephone 501-562-7444

886310036

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)* *Form Approved. OMB No. 2000-0404. Expires 7-31-86*

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NJD011096392 Manifest Document No. 48715222
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Fine Organics
205 North Main St. Lodi, NJ 07644
4. Generator's Phone (201) 472-6800

A. State Manifest Document Number AR- 76910
B. State Generator's ID Same

5. Transporter 1 Company Name: E. T. G. I.
6. US EPA ID Number: NJD000692061
C. State Transporter's ID 471PC770*
D. Transporter's Phone 201-347-8200

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
ENSCO, INC
American Oil Road
El Dorado, ARK. 71730
10. US EPA ID Number: ARD069748192
G. State Facility's ID Same
H. Facility's Phone 501-863-7173

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Polychlorinated Biphenyls ORM-E UN2315 RQ 4.54/10	003	DM	01050	P	NJ PCB X-387
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
(A) PCB contaminated #4 fuel oil >500 PPM PCB ~20% H_2O L/T
*NJDEPE7107(6068) NJ558-TRX

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment and Arkansas state regulations.

Printed/Typed Name	Signature	Month	Day	Year
JAMES R. HIGDON	James R. Higdon	11	02	86

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
ROBERT HUBER		11	02	86

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space
Rec. @ Ensco: 975#

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
SHARON MORGAN	Sharon Morgan	11	02	86

EPA Form 8700-22 (Rev. 4-85) Previous edition is obsolete.

NOTICE: THE ORIGINAL AND NOT LESS THAN

APPENDIX 9

QUESTION #14.A: SAMPLING PLAN
REVISED JANUARY 13, 1987
for
HEXCEL INDUSTRIAL CHEMICALS GROUP
a division of
HEXCEL CORPORATION
205 Main Street
Lodi, Bergen County, New Jersey

ECRA Case # 86009

Prepared by

ENVIRON Corporation
210 Carnegie Center
Suite 201
Princeton, New Jersey 08540

Hexcel Industrial Chemicals Group
205 Main Street
Lodi, Bergen County, New Jersey

ECRA Case No. 86009

C O N T E N T S

Hexcel Industrial Chemicals Group
205 Main Street
Lodi, Bergen County, New Jersey

ECRA Case No. 86009

F I G U R E S

Hexcel Industrial Chemicals Group
205 Main Street
Lodi, Bergen County, New Jersey

ECRA Case No. 86009

T A B L E S

Hexcel Industrial Chemicals Group
205 Main Street
Lodi, Bergen County, New Jersey

ECRA Case # 86009

I. INTRODUCTION

A. Purpose and Scope

The proposed sampling program described below was prepared by ENVIRON Corporation. The purpose of the sampling program is to further define the extent of areas that may be contaminated by industrial chemicals and to provide a substantive basis for the preparation of a Cleanup Plan at the Hexcel Industrial Chemicals Group (Hexcel) facility in Lodi, New Jersey, in order to comply with the requirements of Environmental Cleanup Responsibility Act (ECRA). The proposed sampling program includes: monitor well installation, well development, groundwater sampling and analysis, and soil sampling and analysis.

B. Site Description

This facility is located in Lodi, Bergen County, New Jersey. The site is situated in the Piedmont Physiographic Province of New Jersey. Saddle Brook flows along the western border of the property. The surficial soil in the area of the site is alluvial drift which is comprised of gravel, sand and clay. Soil borings have been drilled at the site (described in Appendix 8) and are used to define the geology at the site to a depth of approximately 10 feet. A layer of brown sandy loam covers the site to a depth of approximately six to eight feet. A thin layer of water-bearing gravelly gray sand has been identified (TenEch 1984) between depths of

I. INTRODUCTION (continued)

B. Site Description (continued)

six to eight feet. This is underlain by a gray silty clay to a depth of at least 10 feet or more. At least one boring constructed by TenEch in 1984 appears to have encountered another sandy layer beneath the gray silty clay at a depth of 10 feet.

The water table has been measured (TenEch 1984) at a depth of approximately four feet near Building No. 1 in an oil recovery well. The depth to the water table is expected to vary over the site but generally is less than ten feet due to the proximity of Saddle Brook and low topographic relief. Groundwater may flow westward into Saddle Brook, although this has not as yet been verified by on-site measurements.

II. AREAS OF ENVIRONMENTAL CONCERN

Four separate studies have been conducted to characterize soil and water contamination at the site. These studies were as follows:

- o TenEch Environmental Engineers Inc. investigated potential fuel oil contamination at the underground storage tanks adjacent to Building No. 1 in 1984. This included drilling twelve borings around the fuel tanks and limited testing (in three borings) for oil and grease.
- o Princeton Aqua Science investigated potential contamination by volatile organic compounds (VOCs), total petroleum hydrocarbons (TPHCs), priority pollutant metals (PPMs), bromide, and polychlorinated biphenyls (PCBs) in June, 1985. This investigation included drilling several soil borings in areas of potential environmental contamination.
- o Princeton Aqua Science conducted a second investigation of potential contamination by VOCs, TPHCs, PPMs, and PCBs in August, 1985. This investigation extended the earlier study by Princeton Aqua Science (June, 1985).
- o ENVIRON Corporation conducted a limited investigation of VOC and PCB contamination in December, 1985, to resolve inconsistencies in the results of earlier sampling programs.

These investigations are described in detail in Appendix 8.

II. AREAS OF ENVIRONMENTAL CONCERN (continued)

Fourteen areas of potential environmental concern (AECs) have been identified. The AECs have been identified based on the four prior site investigations (Appendix 8) and data provided to ENVIRON by Hexcel regarding historical use of the site. During December 1985, ENVIRON also conducted a visual inspection of the facility and, as a result of those visual observations, did not identify any AECs other than those discussed herein.

The results of the previous investigations indicate that eight of the AECs (nos. 1-7 and 12) are known to be contaminated above ECRA cleanup guidelines. No information regarding the presence of contaminants is available in six AECs (nos 8-11, 13, and 14), which include four drum storage areas, a loading platform and a catch basin. As discussed below, four AECs are of concern because of known contamination with TPHCs above ECRA cleanup guidelines. Seven AECs are of concern because of known contamination with VOCs above ECRA cleanup guidelines. Two AECs are of concern because of known PCB contamination above ECRA cleanup guidelines. Three AECs are known to be contaminated with lead, one of which exceeds ECRA cleanup guidelines. One AEC also is contaminated with bromide. The locations of all 14 AECs are mapped in Figure 9.1 (attached as Plate 5).

AEC No. 1 is located on the southeast corner of Building No. 1. This area contains two underground tanks and two above-ground tanks. The two underground tanks were used to store fuel oil until they were taken out of service in 1984. One of these underground tanks failed the Petro Tite®

II. AREAS OF ENVIRONMENTAL CONCERN (continued)

test conducted in November, 1983, by Fairfield Maintenance Inc. Borings indicate that soil adjacent to the tank is contaminated with TPHCs at concentrations exceeding 100 ppm to a depth of at least eight feet. One of the above-ground tanks (Tank 2) is currently used to store fuel oil. The other above-ground tank (Tank 1) is used to mix and store alkaline cleaners. The area beneath these above-ground tanks is partly unpaved. Borings indicate that the soil under the above-ground tanks is contaminated with TPHCs, VOCs, and PCBs at concentrations exceeding ECRA cleanup guidelines to a depth of at least four feet.

AEC No. 2 is a tank farm containing nine above-ground storage or mixing tanks (Tanks 13, 14, 15, 16, 17, 18, Q, R, S). Soil borings indicate that the soil in this area is contaminated with VOCs at concentrations exceeding ECRA cleanup guidelines to a depth of at least 42 inches.

AEC No. 3 is a tank farm containing five above-ground tanks (Tanks 3, 4, 5, 6, 7). These tanks are used to store VOCs. Previous soil borings (Plate 4 in Appendix 8) indicate that the soil in this area is contaminated with VOCs at concentrations exceeding ECRA cleanup guidelines to a depth of at least 30 inches.

AEC No. 4 is in the vicinity of an above-ground storage tank (No. 8) which is used to store VOCs. Previous borings (Plate 4 in Appendix 8) indicate that the soil in this area is contaminated with TPHCs at concen-

II. AREAS OF ENVIRONMENTAL CONCERN (continued)

trations exceeding ECRA cleanup guidelines to a depth of at least 30 inches. The area beneath the tank is unpaved.

AEC No. 5 is the area in the vicinity of four above-ground tanks (Tanks 9, 10, 11, 12). These tanks, which are being used to store alkaline cleaners and VOCs, rest on concrete foundations in two unlined pits. Previous borings inside and outside the pits (Plate 4 in Appendix 8) indicate that the soil is contaminated with VOCs and lead at concentrations exceeding ECRA cleanup guidelines to a depth of at least 30 inches.

AEC No. 6 is located on the northwest side of Building No. 11, facing Saddle Brook. This area is a tank farm of five above-ground tanks (Tanks 21, 22, 23, 24, 25). Tank 21 was formerly used to store bromide and in now empty. The remaining tanks are used to store VOCs. Previous borings (Plate 4 in Appendix 8) indicate that the soil in this area is contaminated with VOCs at concentrations exceeding ECRA cleanup guidelines to a depth of at least 36 inches. The area is also contaminated by bromide.

AEC No. 7 is located on a paved area between Building No. 11 and Saddle Brook. Two above-ground ammonia storage tanks and one underground gasoline storage tank are located in this AEC. None of these tanks are now in use. Previous soil borings (Plate 4 in Appendix 8) indicate that the soil in this area is contaminated with VOCs, and in some places with lead, at concentrations exceeding ECRA cleanup guidelines to a depth of at least

II. AREAS OF ENVIRONMENTAL CONCERN (continued)

30 inches. TPHCs have been detected in the vicinity of the underground gasoline tank at concentrations exceeding 100 ppm at depths of at least 42 inches. The area around the tanks is unpaved.

Four paved areas of the plant are currently used to store empty or full drums. These areas (AEC No. 8, AEC No. 9, AEC No. 10, AEC No. 11) are mapped on Figure 9.1. AEC No. 8 is used to store empty drums on a paved area between Building No. 1 and Saddle Brook. AEC No. 9 is a raw material drum storage area located on pavement between Building No. 12 and Saddle Brook. AEC No. 10 is a paved area between the laboratory building and Building No. 2 which is used to store empty drums. AEC No. 11 is a product drum storage area located east of Building No. 2. All of these areas are presently paved. The sequence and timing of paving is shown in Plate No. 1 in Appendix 8. To date, only AEC No. 10 has been tested for VOCs in a soil boring 24 inches deep. No detectable VOCs were found in this sample.

AEC No. 12 is a concrete-lined pit located along the southern half of Building No. 1. The bottom of this pit is approximately 15 to 20 feet below the ground surface. Based on available data, this pit is believed to extend below the water table, and small volumes of groundwater regularly leak into the pit. Several chemical mixing tanks are located in the pit. Water and oil in the pit has been sampled and were found to contain VOCs and PCBs at concentrations exceeding ECRA cleanup guidelines.

II. AREAS OF ENVIRONMENTAL CONCERN (continued)

AEC 13 is located below the wooden loading platform in the rear of Building No. 1, along the western wall. The platform was used as a general receiving dock prior to the construction of the warehouse in 1968. The area beneath the platform is unpaved.

AEC 14 is a catch basin located in the rear yard adjacent to a drum storage area (AEC 8) behind Building No. 1. This catch basin is part of the industrial sewer system and receives storm runoff from the rear yard, which is paved. Because the catch basin is part of an active industrial sewer and is normally full, it cannot be drained and inspected for integrity. Therefore, this basin will be tested for integrity by soil borings immediately adjacent to its outer wall.

II. AREAS OF ENVIRONMENTAL CONCERN (continued)

Table 9.1: Areas of Environmental Concern

Area Environmental Concern	Description
1	Two underground tanks, two above-ground tanks(Tanks 1, 2)
2	Above-ground tank farm (Tanks 13 through 18, Q, R, S)
3	Above-ground tank farm (Tanks 3 through 7)
4	Above-ground tank (Tank 8)
5	Four above-ground tanks (Tanks 9 through 12)
6	Above-ground tank farm (Tanks 21 through 25)
7	Underground gasoline tank and two above-ground tanks (Tanks 26, 27) AMMONIA storage
8	Empty drum storage area west of Building No. 1
9	Raw material drum storage area west of Building No. 12
10	Empty drum storage area south of Building No. 2
11	Product drum storage area east of Building No. 2
12	Pit along southern half of Building No. 1
13	Loading platform along the western side of Building No. 1
14	Catch basin west of Building No. 1

II. AREAS OF ENVIRONMENTAL CONCERN (continued)

The sampling programs described in Appendix 8 indicates that two previously sampled areas do not contain contaminants in concentrations exceeding ECRA cleanup guidelines. These two areas are discussed below.

The unpaved discarded equipment storage area has been sampled extensively. A total of seven borings have been drilled and sampled during the four previous sampling programs. VOC concentrations have been reported below ECRA cleanup guidelines in all samples collected to date, with two exceptions:

(1) Princeton Aqua Science reported extensive chloroform contamination in the samples collected in August, 1985. For reasons described in Appendix 8, the chloroform findings in the August, 1985, samples are not considered to represent actual site conditions.

(2) Soils from boring G-3, also drilled and sampled by Princeton Aqua Science in August, 1985, were reported to contain 30 ppm of VOCs, however, analyses for VOCs from August, 1985, may be in doubt due to what appears to be erroneous chloroform data. Furthermore, Boring EN-6 drilled and sampled by ENVIRON in December, 1985, at approximately the same location as Boring G-3, contains no VOC contamination above ECRA cleanup guidelines.

For these two reasons, boring G-3 is not believed to represent actual site conditions. Because ENVIRON has not been provided with any information

II. AREAS OF ENVIRONMENTAL CONCERN (continued)

that would suggest that there is a source of contamination in this area, and sampling indicated no contaminated soil, the discarded equipment storage area is not considered to be an AEC. However, a well cluster will be placed near the southwest corner of Building No. 2 to determine whether contamination has occurred.

Both water and stream bank soil samples from Saddle Brook have been collected previously (Princeton Aqua Science, June and August, 1985, respectively). No contamination above ECRA cleanup guidelines was detected in any of these samples, with two exceptions:

(1) Princeton Aqua Science reported extensive chloroform contamination in the bank soil samples collected in August, 1985. For reasons described in Appendix 8, the chloroform findings in the August, 1985, samples are not considered to represent actual site conditions.

(2) A soil sample (F2) by Princeton Aqua Science (August, 1985) indicated contamination of stream bank soil by chloroform (230 ppm) and methylene chloride (20 ppm). No other VOCs were detected in this sample, which would have been expected if the sample were contaminated by discharge from the site. Also, this area is currently protected from on-site storm water run-off by a macadam curb and storm drainage system. Given the apparent erroneous identifications of chloroform in the VOC analysis, and the lack of a known source of methylene chloride in this area, sample F2 does not indicate an area of environmental concern.

III. PROPOSED SAMPLING LOCATIONS AND ANALYSES

A. Sampling in Areas of Environmental Concern

The purpose of the proposed sampling program is to delineate more completely the depth and areal extent of known contamination within eight of the identified AECs and to provide survey level information by limited sampling in four additional areas that ENVIRON has identified as potential AECs based upon ENVIRON's limited review of the historical use of these areas. Proposed sampling locations are mapped on Figure 9.2. The types of samples to be collected and chemical analyses to be performed are summarized in Table 9.2.

To determine the maximum depth of contamination, soil borings will be drilled in the approximate center of the AEC or the presumed source of contamination. These borings will be drilled to the first permeable or sandy zone below the subsurface layer of gray clay. At present, there is no conclusive site-specific data on the depth or thickness of this gray clay layer. Limited drilling in AEC No. 1 indicates that the clay layer begins at eight feet and is at least two feet thick. For the purposes of this proposed sampling plan, it was assumed that a second sandy layer will be encountered at a depth of 10 to 15 feet below the ground surface. These soil borings will terminate at a depth of 20 feet if no deeper sand units are encountered beneath the clay layer. The actual depth of these borings may be shallower, depending on site conditions.

Hexcel Industrial Chemicals Group

ECRA Case # 86009

Table 9.2: Proposed Sampling Locations in Areas of Environmental Concern

AEC [1]	Sampling Location [2]	Number and Type of Samples per Location	Analysis [3]
1	101, 102, 103(a)	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	TPHC, VOC, pH, PCB*
1	104, 105, 106, 107	Power Auger Boring 3 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer)	TPHC, VOC, pH, PCB*
2	201	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	TPHC, VOC, pH
2	202	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	VOC, pH
3	301, 302	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	VOC, pH
3	303(b)	Power Auger Boring 3 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer)	VOC, pH

Hexcel Industrial Chemicals Group

ECRA Case # 86009

Table 9.2: Proposed Sampling Locations in Areas of Environmental Concern (cont.)

AEC [1]	Sampling Location [2]	Number and Type of Samples per Location	Analysis [3]
4	401, 402	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	TPHC, VOC
5	501, 502	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	VOC, pH, Pb, TPHC
5	503	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	VOC, pH, Pb
6	601, 602(c) 603	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	VOC, Br
7	701	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	NH_3, VOC, Pb

Hexcel Industrial Chemicals Group

ECRA Case # 86009

Table 9.2: Proposed Sampling Locations in Areas of Environmental Concern (cont.)

AEC [1]	Sampling Location [2]	Number and Type of Samples per Location	Analysis [3]
7	702	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	VOC, Pb, TPHC, PCB*
8	801	Power Auger Boring 3 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer)	VOC, pH
9	901	Power Auger Boring 3 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer)	VOC, pH
10	1001	Power Auger Boring 3 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer)	VOC, pH
11	1101	Power Auger Boring 3 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer)	VOC, pH
12	1201	Power Auger Boring 5 soil samples: o 3-5' (water table) o 6-8' (gray sand layer) o 9-11' (top of gray clay layer) o 14-16' o 19-21'	VOC, TPHC, PCB*
12	1202	Floating oil in pit	PCB
12	1203	Oil in hot oil system	PCB

Hexcel Industrial Chemicals Group

ECRA Case # 86009

Table 9.2: Proposed Sampling Locations in Areas of Environmental Concern (cont.)

AEC [1]	Sampling Location[2]	Number and Type of Samples per Location	Analysis[3]
12	1204, 1205 1206	Wall wipe samples at seeps	TPHC, PCB
13	1301	Power Auger Boring 6 Soil Samples o 0 - 2' (brown sand layer) o 3 - 5' (water table) o 6 - 8' (gray sand layer) 0 9 -11' (top of gray clay layer) o 14 -16' o 19 -21'	VOC, TPHC, PCB*
13	1302	Power auger Boring 3 soil samples: o 0 - 2' (brown sand layer) o 2 - 4' (brown sand layer) o 4 - 6' (water table)	VOC, TPHC
14	1401	Power Auger Boring 3 soil samples o 3 - 5' (water table) o 6 - 8' (gray sand layer) o 9 - 11' (top of gray clay layer)	VOC, pH

* Only samples contaminated with TPHC at concentrations above 100 ppm will be analyzed for PCB.

1 Area of Environmental Concern.

2 Sampling locations are depicted in Figure 9.2.

3 TPHC: Total Petroleum Hydrocarbons - Water samples will be analyzed for TPHCs by EPA Method 418.1, and soil samples by EPA Method 418.1 following Soxhlet extraction.

VOC: Volatile Organic Compounds - Water samples will be analyzed for VOCs by by EPA Method 624, and soil samples by field GC and EPA Method SW846:8080 (selected samples).

pH: The degree of acidity or alkalinity of water samples will be determined by EPA Method 150.1, and soil samples by EPA Method SW846:9040.

Pb: Lead - Water sampales will be analyzed for lead by EPA Method 239.1, and soil samples by EPA Method 7420.

PCB: Polychlorinated Biphenyls - Water samples will be analyzed for PCBs by EPA Method 608, and soil samples by EPA Method SW846:8080.

Br: Bromide - Samples will be analyzed for bromide by EPA Method 320.1

(a) Soil Boring 103 will be drilled as part of the construction of Monitor Well No. MW3.

(b) Soil Boring 303 will be drilled as part of the construction of Monitor Well No. MW4.

(c) Soil Boring 602 will be drilled as part of the construction of Monitor Well No. MW7.

III. PROPOSED SAMPLING LOCATIONS AND ANALYSES (continued)

A. Sampling in Areas of Environmental Concern (continued)

To date the deepest soil borings at the site have been constructed to a depth of approximately 10 feet. In order to confirm the general site geology, borings will be drilled to a depth of 20 feet at the perimeter of the site before drilling in AECs that are known to be contaminated.

To determine the areal extent of contamination, soil borings will also be drilled around the perimeter of those AECs with known contamination in shallow soils. These borings will be constructed in areas that do not appear, based on current data and a visual inspection of the site, to be contaminated at any levels of concern under ECRA. These borings will be used to define the lateral exent of contamination. These perimeter borings will be drilled to the top of the subsurface layer of gray clay. For the purposes of this proposed sampling plan, it is assumed that these borings will be ten feet deep. The actual depth of these borings may vary depending on site conditions.

It is estimated that three to five soil samples will be collected from these borings. Because the shallow soils have previously been extensively sampled and because the majority of the drilling sites are covered with one to two feet of pavement, soils between the bottom of the pavement and the top of the water table will not be sampled. Soil samples will be collected with split spoons from the water table, estimated to be three to five feet

III. PROPOSED SAMPLING LOCATIONS AND ANALYSES (continued)

A. Sampling in Areas of Environmental Concern (continued)

deep. Because previous sampling results indicate that the gray sand layer found at depths of six to eight feet is highly contaminated at AEC No. 1, this layer will also be sampled. Because the underlying gray clay layer may hinder further downward migration of contaminants, this layer will also be sampled. Soil samples will be collected from the deep borings at intervals of approximately five feet or at changes in lithology. The sampling depths may change depending on site conditions.

Chemical analyses of soil samples will be conducted for parameters that, based on prior sample results and information about manufacturing practices, are expected to be found at each AEC. VOCs, PCBs and oil (TPHC) have been identified as the predominant contaminants at the site (refer to discussion in Appendix 8). VOCs (predominantly aliphatic-compounds) have been identified at eight AECs by the prior sampling program and are believed, based on current data, to be the most widespread contaminants at the site.

In order to define the horizontal and vertical extent of these contaminants, a large number (in excess of one hundred) soil and water samples may need to be analyzed. To provide a technologically effective and cost efficient program of analysis, two levels of sample testing are proposed. First, all samples identified to be analyzed for VOCs will be analyzed by a

III. PROPOSED SAMPLING LOCATIONS AND ANALYSES (continued)

A. Sampling in Areas of Environmental Concern (continued)

field gas chromatograph (GC) to quantitatively identify the level of total volatiles using surrogate VOC compounds that characterize gross levels of contamination. Based on data currently available from the site, it is anticipated the tetrachloroethylene and methylene chloride would be used as VOC surrogates. These compounds are the most common contaminants at the site and have been found at generally higher concentrations than other VOCs that have also been identified. The field GC has the added advantage of a virtual real time analysis of samples while sampling is still underway at the site, so that the field program can be altered to collect additional samples as necessary to completely identify contaminated areas.

Secondly, every three out of ten soil samples analyzed for VOCs by field GC will be quantitatively analyzed for specific VOC compounds using EPA Method 624 for comparison to the field GC results. Prior analyses indicate that aliphatic, chlorinated organic solvent compounds are the predominant contaminants at the site. Aromatic compounds, when identified at the site, have been coincident with higher levels of other aliphatic VOCs. The quantitative analysis of selected samples by Method 624 serves two purposes. First, it establishes the reliability and accuracy of the testing of the samples for surrogate VOCs by the field GC. Secondly, it establishes if other, as yet unidentified, VOC compounds are also present

III. PROPOSED SAMPLING LOCATIONS AND ANALYSES (continued)

A. Sampling in Areas of Environmental Concern (continued)

that may be of concern under ECRA. Samples would be selected for Method 624 analysis over a range of VOC levels to establish the reliability and accuracy of this field GC over the range of concentrations anticipated at the site.

The proposed analytical approach of screening all soil samples for surrogate VOCs by a field GC and quantitative analysis and verification for selected soil samples (approximately 30 percent of all samples) by EPA Method 624 will effectively identify the extent and degree of site contamination sufficient to develop cleanup strategies and designs. Further verification-sampling of the effectiveness of cleanup is also anticipated as part of the actual cleanup construction. The design of this verification monitoring will be addressed in the site remedial design.

Based on current data, contamination by PCBs is suspected at AEC Nos. 1 and 12. This PCB contamination is believed to be the result of contaminated oil. To date the highest level of PCB contamiantion in oil that has been identified at the site is 10,000 ppm in an oil sample inside Building No. 1 (AEC No. 12). Outside Building No. 1 near the abandoned fuel oil tanks (AEC No.1), PCBs in fuel oil have been identified by PAS at up to 40 ppm. Using the higher of these two values (10,000 ppm) it can be shown that when oil (TPHC) is present in soil at 100 ppm, PCBs may also be

III. PROPOSED SAMPLING LOCATIONS AND ANALYSES (continued)

A. Sampling in Areas of Environmental Concern (continued)

present at up to 1 ppm. These two concentrations are precisely the levels of concern under ECRA for TPHC and PCBs, respectively. Therefore, TPHC will be used as a surrogate for PCB contamination in soil samples from selected AECs. If TPHC is tested and found to exceed 100 ppm, then a separate analysis of the sample for PCBs will be conducted by EPA Method 608. If TPHC is not found in a sample above 100 ppm, then PCBs will not be analyzed since current data suggests that the PCB concentration should be below the level of concern under ECRA (1 ppm).

B. Sampling For Characterization of Hydrogeologic Conditions

Based on the site topography, it is anticipated that shallow groundwater flows westward across the site toward Saddle Brook, although the direction of flow may vary seasonally and has not as yet been verified by on-site measurements. It is proposed to construct monitoring wells downgradient of those AECs with previously documented contamination in order to determine if groundwater has been impacted. Thirteen monitoring wells (six well nests plus a background well) will be installed throughout the site. Six shallow wells will monitor the gray sand layer above the clay at a depth of six to eight feet. Due to the shallowness of these wells, it is anticipated that no more than five feet of well screen will be installed.

III. PROPOSED SAMPLING LOCATIONS AND ANALYSES (continued)

B. Sampling For Characterization of Hydrogeologic Conditions (continued)
Seven deeper wells will monitor the first permeable or sandy zone below the subsurface layer of gray clay. At present, there is no conclusive site-specific data on the thickness of this gray clay layer. For the purposes of this proposed sampling plan, it is assumed that these deep monitoring wells will be 20 feet deep. This may change depending on site conditions encountered during drilling. If no sand unit is found at the site beneath the subsurface layer of gray clay, then only the shallow wells will be constructed.

All shallow monitoring wells will be located adjacent to deep monitoring wells, as well nests. Soil samples will be collected from three of the monitoring wells (MW3, MW4, and MW7) during construction in order to further evaluate the area for soil contamination.

Chemical analyses of groundwater samples are outlined in Table 9.3. The proposed analytical parameters have been selected based on prior identification of contamination at specific AECs and known uses of chemicals at the site. Three wells (Nos. MW1, MW9 and MW10) will be tested for priority pollutants (+40) to identify any as yet unknown or unidentified chemicals at the site in groundwater. The MW9-MW10 well nest was selected for PP+40 analysis since it is downgradient of the areas on on the site that have been previously identified as being contaminated. If additional industrial

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Table 9.3: Additional Proposed Sampling

AEC [1]	Sampling Location [2]	Number and Type of Samples per Location	Analysis [3]
Background	MW1	Deep Monitor Well* 1 groundwater sample	TPHC, pH, PP+40
1, 12	MW2	Shallow Monitor Well* 1 groundwater sample	TPHC, VOC, PCB, pH
1, 12	MW3	Deep Monitor Well 1 groundwater sample	TPHC, VOC, PCB, pH
3, 4	MW4	Shallow Monitor Well 1 groundwater sample	TPHC, VOC, pH
3, 4	MW5	Deep Monitor Well 1 groundwater sample	TPHC, VOC, pH
6, 7	MW6	Shallow Monitor Well 1 groundwater sample	TPHC, VOC, Br, PCB, pH, Pb
6, 7	MW7	Deep Monitor Well 1 groundwater sample	TPHC, VOC, Br, PCB, pH, Pb
7	MW8	Shallow Monitor Well 1 groundwater sample	TPHC, pH, PP+40
7	MW9	Deep Monitor Well 1 groundwater sample	TPHC, pH, PP+40
12	MW10	Shallow Monitor Well 1 groundwater sample	TPHC, VOC, Br, PCB, pH, Pb
12	MW11	Deep Monitor Well 1 groundwater sample	TPHC, VOC, Br, PCB, pH, Pb
Downgradient	MW12	Shallow Monitor Well 1 groundwater sample	TPHC, VOC, pH, Br, Pb
Downgradient	MW13	Deep Monitor Well 1 groundwater sample	TPHC, VOC, pH, Br Pb

* Shallow monitor wells will be screened in the gray sand layer at a depth of approximately 6 to 8 feet. Deep monitor wells will be screened in the first permeable or sandy layer below the subsurface layer of gray clay.

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Table 9.3: Additional Proposed Sampling (continued)

AEC [1]	Sampling Location[2]	Number and Type of Samples per Location	Analysis [3]
	MW14	Shallow Monitor Well 1 groundwater sample	TPHC, VOC, pH
	MW15	Deep Monitor Well 1 groundwater sample	TPHC, VOC, pH

Footnotes

1 Area of Environmental Concern.

2 Sampling locations are depicted in Figure 9.2.

3 TPHC: Total Petroleum Hydrocarbons - Water samples will be analyzed for TPHCs by EPA Method 418.1, and soil samples by EPA Method 418.1 following Soxhlet extraction.

VOC: Volatile Organic Compounds - Water samples will be analyzed for VOCs by by EPA Method 624, and soil samples by field GC and EPA Method SW846:8080.

pH: The degree of acidity or alkalinity of water samples will be determined by EPA Method 150.1, and soil samples by EPA Method SW846:9040.

Pb: Lead - Water sampales will be analyzed for lead by EPA Method 239.1, and soil samples by EPA Method 7420.

PCB: Polychlorinated Biphenyls - Water samples will be analyzed for PCBs by EPA Method 608, and soil samples by EPA Method SW846:8080.

Br: Bromide - Samples will be analyzed for bromide by EPA Method 320.1

PP+40: The 129 USEPA priority pollutants plus identification of 40 other compounds will be analyzed by a series of analytical methods known collectively as the USEPA Priority Pollutant Plus 40 analysis.

III. PROPOSED SAMPLING LOCATIONS AND ANALYSES (continued)

B. Sampling For Characterization of Hydrogeologic Conditions (continued)

chemicals are identified by these priority pollutant analyses that indicate other chemicals are present above ECRA cleanup guidelines, priority pollutant analyses may be completed on the remaining downgradient wells.

EPA Method 624 is proposed for analysis of VOCs in water samples. Samples collected at the site to date indicate that the primary contaminants at the site are aliphatic, chlorinated organic solvent compounds. Aromatic compounds have only been found at much lower levels and then only when aliphatics are also present at higher concentrations. The purpose of these samples is to define the extent of contamination sufficient to develop a cleanup program for soil and groundwater. The data from EPA Method 624 is sufficient for this purpose, given the prior data from sampling at the site.

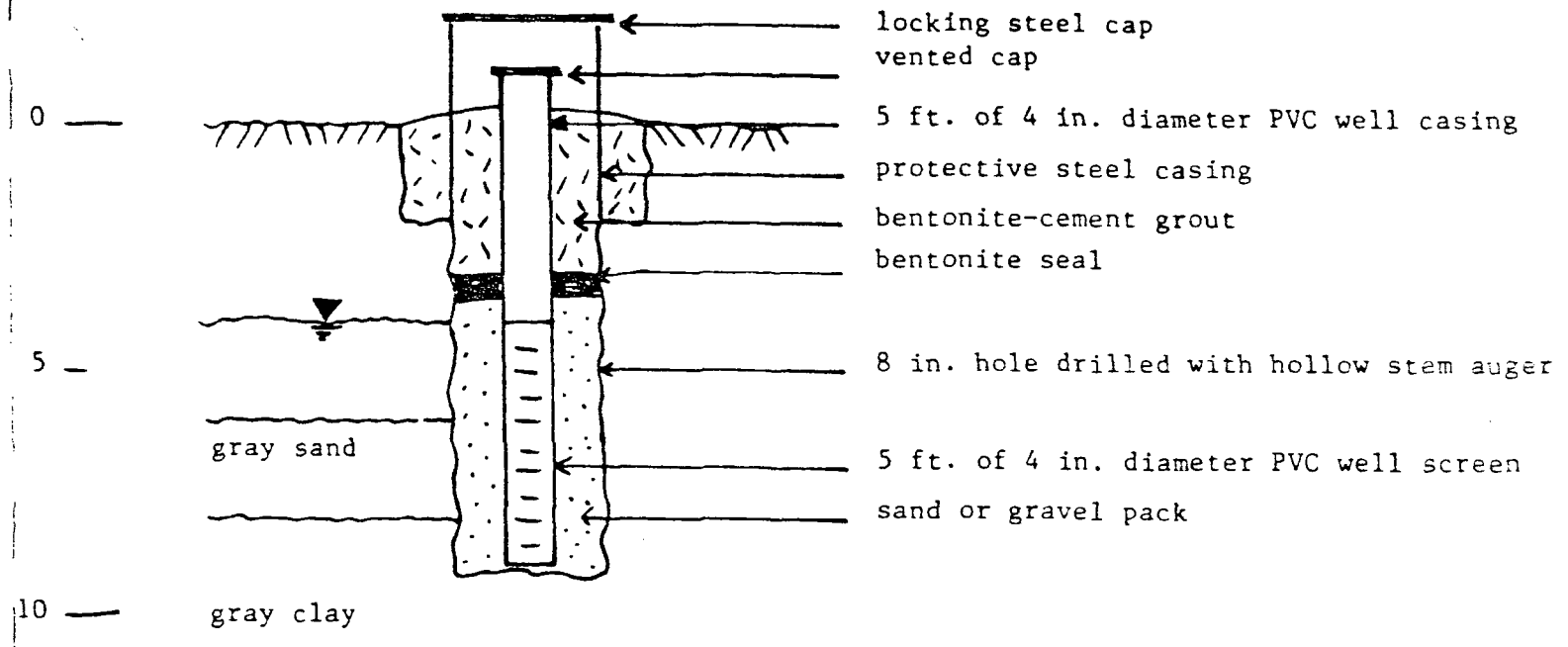
IV. SAMPLING METHODOLOGIES

A. Well Construction

The typical well construction details for the shallow and deep monitoring wells to be installed at the site are shown in Figures 9.3 and 9.4 and conform with DEP specifications. One of the licensed well drillers on the staff of Jersey Boring Inc. will do the well installation.

Boreholes for the shallow monitoring wells will be drilled with a hollow stem auger. Boreholes for the deep monitoring wells will be drilled by driving casing or by mud rotary. A temporary or permanent casing for the deep monitoring wells will be grouted or driven into the subsurface layer of gray clay in order to prevent any contamination in the shallower gray sand layer from migrating into deeper aquifers. Well construction will include 4-inch diameter PVC casing and screen. If possible, the stickup will be adjusted to be above flood levels. If necessary, sealed casing will be used.

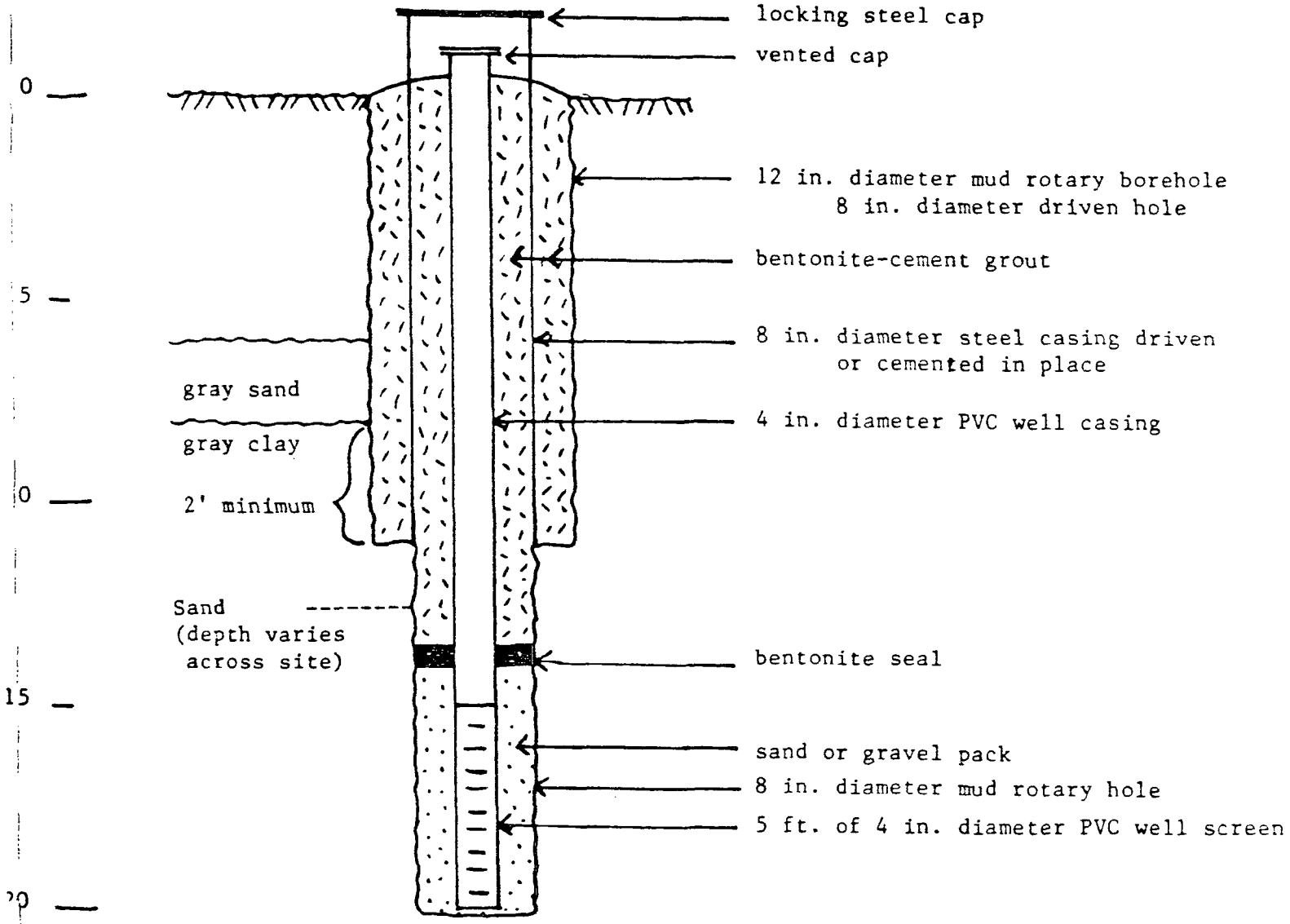
To avoid contaminating the well with surface water, a minimum of five feet of bentonite-concrete grout will be installed. Well screens will be placed with the tops approximately two feet above and the bottoms approximately three feet below the water table. Well screens will not be longer than five feet in order to avoid creating a conduit for downward migration of any contaminants which may be present.



Note: A water tight protective cap will be used on wells in all areas subject to flooding.

Figure 9.3: Proposed Construction of Shallow Monitor Wells

Actual depths may vary depending on site conditions.



Note: A water tight protective cap will be used on wells in all areas subject to flooding.

Figure 9.4: Proposed Construction of Deep Monitor Wells

Actual depths may change depending on site conditions.

IV. SAMPLING METHODOLOGIES (continued)

A. Well Construction (continued)

The wells will be developed by over pumping, air surging, or by another appropriate method selected by ENVIRON. All wells will be surveyed by a registered land surveyor to an accuracy of plus or minus 0.01 feet, and water table/potentiometric data will be obtained one to three days after the wells have been developed.

B. Soil Borings

Shallow soil borings will be drilled with a hollow stem auger. Deep borings in areas of known contamination will be drilled in a manner to avoid introducing shallow contamination into deeper aquifers, by using mud rotary or standard penetration boring techniques. The shallow contaminated sand layer will be cased and sealed before drilling beyond the subsurface layer of gray clay. Soil samples will be collected with split spoons.

C. Sample Collection

Each sample container will be labeled and the method of collection and location recorded in a field log book. The samples will be placed in containers prepared and supplied by the laboratory. Strict chain of custody records and procedures will be followed. To provide quality control, soil and water duplicate samples will be collected and analyzed. One duplicate sample will be collected and analyzed for every lot of ten samples for each

IV. SAMPLING METHODOLOGIES (continued)

C. Sample Collection (continued)

analytical parameter in each medium. To monitor the efficiency of field decontamination procedures, a field or wash blank will be collected for every ten samples and analyzed for each analytical parameter for which samples were collected. In addition, on days that VOC samples are collected, a trip blank which will accompany the crew during all sampling will be analyzed for VOCs.

D. Field Procedure Protocols

For details on the sampling and field procedures to be followed at this site, refer to the ENVIRON Manual of Field Procedures included as Attachment 1.

V. ANALYTICAL METHODOLOGIES

A. Laboratory Selection

JTC Environmental Consultants of Rockville, Maryland will analyze all water and soil samples.

B. Analytical Methodologies

TPHCs will be analyzed for in water by EPA Method 418.1, and in soil by EPA Method 418.1 following Soxhlet extraction. VOCs will be analyzed for in water by EPA Method 624, and in soil by EPA Method SW846:8080. The pH of water sampales will be determined by EPA Method 150.1, and of soil samples by EPA Method 846:9040. Lead will be analyzed for in water by EPA Method 239.1, and in soil by EPA Method 7420. PCBs will be analyzed for in water by EPA Method 608, and in soil by EPA Method SW846:8080. Bromide will be analyzed for in both water and soil by EPA Method 320.1. Details on analytical methodologies are included in the laboratory QA/QC manual available from the laboratory.

The laboratory will not be informed which samples are duplicates or blanks. Each sample will be marked only with a Chain of Custody number, the date and time collected, and the analysis to be conducted.

V. ANALYTICAL METHODOLOGIES (continued)

C. Splitting Samples with NJDEP

Upon request, provisions will be made to provide the NJDEP with split samples.